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THE JOURNAL OF PERIODONTOLOGY is published to serve as the professional journal of periodontia; to keep dentists in touch with research being carried on in this field and related sciences; to stimulate greater interest in the supporting tissues of the teeth and their relation to oral and general health. The plan to continue the publication of abstracts indefinitely will make the Journal a fund of extensive information, readily available to students, teachers, researchers and clinicians.

The Journal is the official organ of the American Academy of Periodontology and will contain, therefore, those papers of scientific and practical interest which are presented at the annual meetings of that society. The proceedings of the 1937 annual meeting will be published in the January, 1938, issue. This number contains the abstracts of articles on periodontia which appeared during the year of 1936.

We are grateful to all who have made available the subject matter from which the abstracts and copies have been made, including the authors of the original articles, the journals mentioned in the text of the abstract section, and those who have aided in any way in compiling the material presented in this issue.

"AFTER a two years' study of the subject of nomenclature as related to the science of periodontology, in which an earnest attempt has been made to obtain the most authoritative opinion regarding the use of the prefixes, *para* and *peri*, the committee has been forced to the conclusion that the prefix *peri* is the more suitable for the following reasons:

"*First*, and most important of all, because of its greater accuracy. As stated by a life-long student of Greek '*Para* can mean anything near or in the neighborhood of. *Peri* means that also, but has the additional meaning of something that surrounds; nor does it need to mean a connecting envelope or tissue. Its meaning can extend further than the first enveloping tissue.' This is confirmed by another student of Greek who says: 'There is no linguistic basis for saying that *peri* must connote immediate contiguity in a technical sense. That would be to import something into the Greek *peri*.'

"*Second*, because it is the unanimous choice of Greek scholars whose authority no one can question.

"*Third*, because of the general use of the prefix *peri* in this country. It has become so deeply established in our literature that attempts to change it should not be undertaken without good and sufficient reasons. Your committee in its study of the subject has been unable to find such reason."

Extract—Report of Committee on Nomenclature A. A. P.—*See p. 88.*

THE JOURNAL OF PERIODONTOLOGY

JULY, NINETEEN HUNDRED THIRTY-SEVEN

The Effect of Medicaments on the Motility of the Oral Flora with Special Reference to the Treatment of Vincent's Infection*[1]

By S. LEONARD ROSENTHAL, D. D. S., Philadelphia, Pa.

SPIROCHETES, spirilla, fusiform bacilli, vibrios and cocci (Figure 1) are responsible for most acute oral infections, and play an important though not exclusive part in periodontoclasia.[1] The exact etiology of these conditions is as yet undetermined, however, and the aim of medication should be to destroy all pathological microscopic life in the shortest possible time without injury to the tissues.

In the search for the ideal drug for use in the oral cavity, there are certain requisites to be fulfilled:

(1) Low tissue toxicity; (2) Lack of corrosive action on teeth or metals; (3) Efficiency in the presence of organic matter; (4) Low surface tension; (5) Speed of action; (6) Power of penetration; (7) Freedom from undue specificity; (8) Maximum efficiency at mouth temperature; (9) Stability; (10) Complete solubility in water; (11) Efficiency at high dilutions; (12) Homogenous in composition; (13) Neutral in reaction; (14) Lack of objectionable, odor, taste or staining; (15) Low cost.

The usual in vitro method of testing the bactericidal properties of chemicals is the phenol coefficient test wherein substances are introduced into culture media which has been inoculated with pure cultures of bacteria—usually B. typhosus. The bactericidal efficiency is calculated by the dilution which inhibits growth. This test is inadequate for our purposes for:

1. The mouth contains large quantities of organic matter which protects bacteria from drug action, and which may break down the chemical structure of the medicament. McCulloch[2] writes, "If sufficient debris is present, the amount of disinfectant ordinarily added may not be adequate to form a toxic film around all particles and some bacterial cells may not be subjected to the disinfectant. Since the conditions under which disinfectants are tested do not provide for the addition of debris, and since disinfection under practical con-

*From the Department of Bacteriology and Pathology, School of Dentistry, University of Pennsylvania. Read before the American Academy of Periodontology at Atlantic City, N. J., July 9, 1937.

[1]Awarded the Benjamin Lord Prize by the First District Dental Society of the State of New York for the year 1937.

ditions may include tremendous amounts of particulate matter, the phenol coefficients . . . may not be applicable to conditions of actual use."

2. It is difficult and in many instances impossible to obtain cultures of oral flora, yet no test of an oral disinfectant is complete without these organisms.

3. The pH of the mouth should be duplicated for these tests since variations in pH affect the efficacy of drug action.

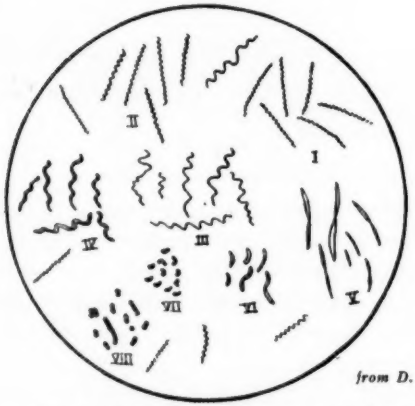
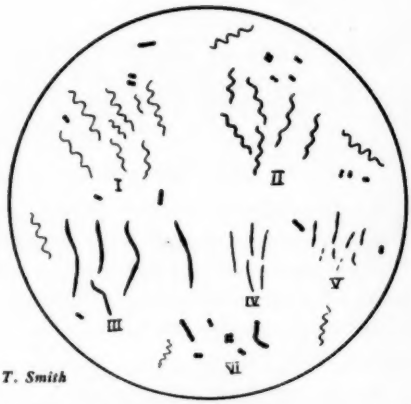


Fig. 1.—Drawing made from dark field showing various types of mouth organisms: *I*, T. microdentium; *II*, T. macrodentium; *III*, T. vincenti; *IV*, T. buccale; *V*, fusiform bacilli; *VI*, S. sputigenum; *VII*, Vibrio viridans; *VIII*, cocci.



from D. T. Smith

Fig. 2.—Drawing showing mouth organisms stained with gentian violet: *I*, T. vincenti; *II*, T. buccale; *III*, large fusiform bacilli; *IV*, medium sized fusiform bacilli; *V*, small fusiform bacilli; *VI*, cocci. T. microdentium and T. macrodentium are not stained with gentian violet.

THE APPARATUS

To overcome these disadvantages, the following test was devised using loss of motility as a basis of comparison. The apparatus (Figure 3) consists of a glass slide at one end of which a groove has been ground with a fine stone. The groove extends approximately one-third the length, and is sufficiently deep to accommodate a glass tube below the surface level of the slide. The tubes are calibrated so that the quantities of the substances to be tested will be constant. The standard used for these tests is twice the amount contained in a 2mm. loop of 28 gauge metal which has been dipped into distilled water at 37° C. The tube is secured to the slide by sticky wax in a manner that will not interfere with the vaselined cover glass, and a length of rubber tubing is attached to the free end.

To make a test, a flamed standard loop is inserted beneath the gingival margin of a suitable patient so that it becomes filled with saliva, bacteria, and debris. Two loopsful—approximating the quantity of drug in the tube—are placed on the petrolatum edged cover glass which is then so centered on the warmed slide that the edge of the material touches the end of the groove. The preparation is then transferred to the stage of a dark field microscope and focused.

Numerous organisms of all types are seen moving around particles of detritus. Their activity and the number of dead bacteria are noted, and only those speci-

mens used in which all types of microörganisms are present and vigorously active. The free end of the rubber tubing is placed between the lips, and with the eye to the eyepiece, all the drug is gently blown out of the tube. To prevent capillarity from drawing material back into the tube, it is carefully rotated to disengage it from the wax and withdrawn.

Through the eyepiece is seen a surging current as the drug enters the field. This will disappear in about thirty seconds if blowing has not been too vigorous. As an efficient drug comes into contact with the bacteria, activity is slowed. At times spasmodic jerks are observed which decrease in frequency until motility is entirely lost. The time elapsing from the introduction of the drug until motility ceases in *all fields* is noted with a stop watch. Observation of the entire specimen enables study of the power of penetration. The test is repeated until three similar results are obtained.

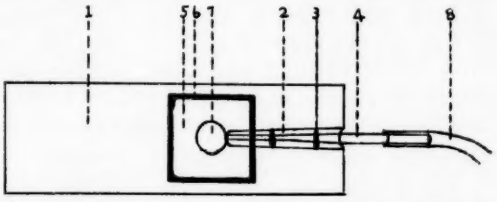


FIG. 3—1. Glass slide; 2. Groove ground in slide; 3. Sticky wax; 4. Glass tube containing drug; 5. Cover glass; 6. Vaseline; 7. Specimen—saliva and bacteria; 8. Rubber tubing.

The bactericidal effect on the non-motile flora is determined by mixing equal quantities of drug and saliva in a test tube. After fifteen minutes of contact during which the tube is occasionally agitated, subcultures are taken.

This method eliminates the disadvantages of the phenol coefficient test and more closely approximates conditions *in vivo*. The test is not limited to drugs used in the oral cavity. Any secretion can be used to duplicate conditions found in the body.

THE TESTS

In order to obviate the question of difference in virulence of bacteria taken from different persons, the writer used material from his own mouth, refraining from the usual hygienic measures for twenty-four hours before testing. The organisms were similar to those obtained from lesions of Vincent's infection. A preliminary test using one chemical on material from my mouth, from an acute, and from a chronic Vincent's infection gave comparable results.

The spirochete is the most readily affected. Even distilled water causes a few to lose motility, and in large quantities will destroy practically all motility. The cocci are the most resistant. Few indeed are the usable chemicals which even in strong solutions do not leave a few survivors protected by debris.

The accompanying table records the results of tests of those drugs commonly employed for the treatment of Vincent's infection. The time required for loss of motility is recorded in minutes. No records were made after fifteen minutes, and continued motility at the expiration of this time is recorded: 15. Instant

loss of motility on contact with the drug is recorded: contact. Subcultures were made on 1. Rosenow's brain broth, 2. blood agar slants, and 3. blood agar slants made anaerobic by Wright's method. All media was examined after 72 hours incubation.

CHROMIC ACID

This seems to be the most popular treatment for Vincent's infection. It was in use as early as 1870.[3] Its chief advocates ascribe its virtue to the great quantity of oxygen liberated upon its use. The value of this statement, if it were true, will be discussed under oxygen-liberating compounds; but the fact is that *under the conditions of actual use, no oxygen is liberated from chromic acid, and there is no method of liberating oxygen from this compound without precipitating insoluble toothstaining chromates.*

The problem was referred to the John Harrison Laboratory of Chemistry, University of Pennsylvania, where 8% chromic acid was tested by Fred E. Sheibley and R. E. Houghton at mouth temperature mixed with saliva, raw meat, and blood. No oxygen was evolved.[4]

Under my tests, while many bacteria lost motility on contact with the acid, the majority of spirochetes retained a sluggish motility for 5 minutes. This is due to a coagulating action on organic matter. The coagulum acts as a protective wall for many bacteria and slows the diffusion of the chemical through the saliva. Comparison with sulphuric and hydrochloric acids showed a similar reaction although the latter acids were slightly more efficient because of their greater dissociation.

The action of chromic acid seems purely caustic. When its destructive action on the hard[5] and soft[6,7] structures is considered together with the possibility of systemic reaction,[8] the use of chromic acid in the mouth seems unjustifiable.

OTHER CAUSTICS

Silver nitrate. On introduction of this solution, the entire cell structure melts away on contact. In tests of the 20% solution, many cocci remained intact and vital protected by coagulation of surrounding organic matter. In 1% concentration, fewer cell structures were destroyed although it is still markedly caustic. Being less coagulating, this solution is more efficient than the higher concentrations. Although motility is not destroyed exactly on contact, it disappears within 30 seconds, and all subcultures are sterile.

Protalgar, a strong silver protein, *zinc chloride, camphophenique,* and two *creosote* compounds were not effective. A saturated solution of *copper sulphate* stops motility of spirochetes and vibrios on contact. It is not destructive of tissue.

OXYGEN-LIBERATING COMPOUNDS

Because cultures of spirochetes and fusiform bacilli can be grown only under strict anaerobic conditions, nascent oxygen has long been popular as a means of eliminating them. Since 1927, sodium perborate has been enthusiastically hailed as a specific although its use is not without danger to the mucous membranes.[9] Under actual conditions, however, these organisms are not obligate anaerobes.

Either their habitat has rendered them facultative to oxygen, or they are protected by the presence of organic matter. McCulloch[2] tells us that the greatest value of hydrogen peroxide is mechanical; that its influence is transitory; and in the presence of large amounts of organic matter, its action is feeble. Bryan[9] found an increased number of bacteria in mouth rinsings after the use of oxygen-liberating compounds.

I have tested saturated solutions of *sodium perborate,* full strength *hydrogen peroxide,* and a combination of *potassium permanganate plus hydrogen peroxide.* None was any more effective than tap water. After 15 minutes, the microorganisms were as active as before exposure to these substances.

THE HALOGENS

Dakin's solution was effective against spirochetes on contact. Many vibrios and bacilli lost motility, but the majority remained active. The solution is unstable.

Aromatic Chlorazene Powder is a stable mixture which when dissolved in water yields a Dakin's solution. A 1:64 solution recommended by the manufacturer resulted in many bacteria of all types losing motility from contact to the fourth minute, and a sluggishness of all organisms on contact. With the exception of the spirochetes (all of which were non-motile in 6¼ minutes) many organisms were still moving at fifteen minutes. A mouth wash, however, is not required to be the perfect germicide, and this mixture seems to be far more effective than the sodium perborate and other substances that we have been prescribing for our patients' home use.

Care must be exercised to prevent frequent contact of chlorinated solutions and the chromium alloys often used in prosthesis. Chlorine will attack chromium oxide resulting in permanent discoloration. In the presence of silver amalgam, prolonged use of this solution will cause a dark brown or black deposit upon the teeth. The stain is harmless and can be removed by prophylaxis.

Free *iodine* is most effective against the non-motile flora. In 25% strength, sterile subcultures follow iodine solutions and saliva in contact for only 30 seconds. Too long exposure of the mucous membranes to this element may cause irritation.

Lugol's solution which contains 5% of iodine causes spiral forms and vibrios to lose motility on contact, but bacilli retain their activity.

Tincture of iodine, containing 7% of iodine in alcohol is particularly efficient. All organisms lose motility on contact. The escharotic effect of alcohol on the mucous membrane unfortunately prevents its extensive use in the mouth. The same is true of *Churchill's iodine,* containing 16.5% of iodine in alcohol.

Talbot's iodoglycerol, containing 25% of iodine, is effective for all types on contact. The cell structure of many organisms becomes stained. Were it not for its high viscosity (the disadvantages of which will be discussed under glycerin) this would be an ideal treatment for all gingival infections.

By substituting water for glycerin in the above formula, we obtain a 25% *aqueous solution of iodine* with the formula: zinc iodide 15 parts, iodine crystals 25 parts, distilled water 60 parts. This has the same bactericidal properties as iodoglycerol, is no more escharotic, and has a much lower surface tension.

Bico, which appears to be a combination of iodine and starch water, causes many spirochetes to lose motility during the fifteen minute observation; but the majority of them and all of the other types remain active.

THE DYES

Dyes may unite with cement or silicate fillings; or enter exposed dentinal tubuli or a slight defect in the margin of a porcelain inlay, resulting in ineradicable stains. If dyes are employed, suitable protective substances should be used.

The dyes are more effective against the spiral forms than against the others. The B. fusiformis (as all Gram negative organisms) is especially resistant to dyes which have been recommended as an ingredient of their culture media.[10] None of the dyes tested were particularly efficacious.

Mercurochrome does not yield mercury atoms. The mercury remains as a firmly bound part of the dye molecule.[8] Mercurochrome in 5% solution renders spirochetes non-motile on contact. It is not effective against the other organisms nor at all effective in 2% concentration.

COMPOUNDS OF MERCURY

Tincture of metaphen which is a 1:200 solution in alcohol and acetone, stops all motility on contact. The untinted preparation gave negative subcultures; the tinted showed growth of streptococci. In weaker solutions, metaphen is not effective.

Bichloride of mercury 1:2000 coagulates albumin. While many bacteria lose motility on contact, the coagulum protects many others. It is less effective than *mercuric cyanide* 1% which functions against all spirochetes in 3½ minutes and vibrios in 9 minutes. Both chemicals are protoplasmic poisons, the use of which is fraught with danger.

Merthiolate in 1:1000 aqueous solution acted on spirochetes in 6 minutes and vibrios in 2½ minutes.

BISMUTH AND ARSENICAL COMPOUNDS

Bismuth sodium tartrate 1.5% aqueous solution is rapid in action. It causes loss of spirochetal activity on contact and cessation of motion in other forms within 5 seconds.

Potassium bismuth tartrate 50% in glycerin does not change motility.

Bismarsen 10% is instantly effective against spirochetes and against vibrios in 5 minutes. Bacilli survived more than 15 minutes.

Fowler's solution (liquor potassii arsenitis) causes loss of motility of spirochetes and vibrios in 10 minutes. Even less effective is the unstable *mixture* of Fowler's solution, wine of ipecac, hydrogen peroxide and glycerin. Poisoning can follow the too generous use of this medicament.[11]

A saturated solution of *Aldarsone* stops spirochetal motility on contact.

Tryparsamide 10% is not effective. *Sulpharsphenamine* 25% causes loss of spirochetal motion on contact and of other forms in 10 minutes.

Aqueous solutions of *neoarsphenamine* have no value for topical applications in less than 20% strength when it exercises its spirocheticidal effect on contact and stops vibrio motility in 3 minutes. Bacilli remain active.

Arsphenamine in 10% aqueous solution comes nearer to fulfillment of the requirements of the ideal drug than any other employed in the treatment of Vincent's infection. While all requirements are not met, *all motility ceases upon contact with this drug and it is equally effective against the entire motile oral flora.* Growth of the non-motile bacteria is also affected, very few colonies growing in the culture media. Clinically, this compound is equally satisfactory. Its application gives immediate relief from pain as well as prompt resolution of the infection.

Arsphenamine diglucoside 10%, marketed as Salvarsan Glucose Solution comes as 3cc. ampules of arsphenamine already in solution. It is stable when protected from direct sunlight. Results are identical with the aqueous solution, and it has the advantage of saving the time of mixing and of being without objectionable odor and taste.

Mapharsen, saturated solution, stops spirochetes and vibrios on contact.

OTHER DRUGS

Activity was unchanged by solutions of *emetin hydrochloride* 20%, full strength *hexylresorcinol, Kamillosan* (camomile) or *caroid* (papain). *Oxyquinoline sulphate* (chinosol) has some antibacterial properties. It is unsuitable for an oral antiseptic, however, because of its action on metals. Amalgam and gold become blackened by this solution.

The test of *sodium ricinoleate* 2% agreed with Kolmer's report[18] of poor bactericidal properties.

Soap has poor penetrative powers. Many organisms, protected by debris, remain active. Saturated solutions stopped the motility of spirochetes on contact.

Sodium citrate 2% caused loss of motility of many spirochetes in 3½—10 minutes. The majority of them and other organisms remained unchanged.

Argyrol 20% is effective against vibrios and spirochetes on contact.

Glycerin as a vehicle made tests of many combinations impossible, the resulting solution being too thick to be drawn into the tube even by prolonged suction. When it could be drawn into the tube, considerably more time was required for the medicament to function than a similar aqueous solution, (cf. sodium bismuth tartrate and arsphenamine in the table). The time varied greatly due to irregular penetration and the fact that glycerin is not readily miscible with saliva.

When treating disease one should recall that microscopic crevices lead from the depths of the gingival trough into the deeper tissues. Here is the site of the greatest infection, protected as it is from mechanical and chemical activities in the mouth. The only way to combat these lesions is to introduce solutions into the gingival trough so that capillary attraction will cause the drug to enter these minute canals. Obviously the solution must mix readily with saliva, have a low surface tension, and penetrate organic debris rapidly. Equally obvious are the disadvantages of glycerin as a vehicle for such solutions.

THE NON-MOTILE FLORA

The non-motile flora are highly resistant to antiseptic measures. Iodine, untinted tincture of metaphen, and 1% silver nitrate were the only substances

yielding negative cultures although arsphenamine and Mapharsen greatly reduced their numbers.

SUMMARY

A new test of antibacterial efficiency is described.

Sixty-eight solutions recommended for the treatment of Vincent's infection are evaluated.

The action of chromic acid is purely caustic. No oxygen is evolved when chromic acid is applied to the tissues.

Nascent oxygen is of no value in the treatment of Vincent's infection other than mechanical cleansing.

Arsphenamine is not only a spirocheticide, but is efficient against the entire oral flora.

Among those substances which are not injurious to the oral tissues, those instantly stopping movements of the entire flora are: 10% aqueous solution of arsphenamine, 10% arsphenamine diglucoside, 25% aqueous solution of iodine, Talbot's iodoglycerol, tincture of metaphen, and 1.5% aqueous solution of bismuth sodium tartrate. Slightly less efficacious but still of value are: saturated solutions of copper sulphate and Mapharsen, 20% argyrol, and Lugol's solution.

Most efficient against the non-motile flora and not injurious to the tissues are: Lugol's solution, 25% aqueous solution of iodine, Talbot's iodoglycerol, and tincture of metaphen (untinted). Markedly affecting growth, but with a few colonies surviving are 10% aqueous solution of arsphenamine, 10% arsphenamine diglucoside, saturated solution of Mapharsen, and tincture of metaphen (tinted).

LOSS OF MOTILITY

Figures represent the time required for loss of motility in minutes.
Contact—instant loss of motility.
Organisms still motile at the end of 15 minutes are marked 15.
All solutions are aqueous unless otherwise noted.
0—no growth } Non-motile organisms.
+—growth }

Drugs	Spirochetes	Vibrios	Bacilli	Subcultures: Rosenow's brain broth	Subcultures: Blood agar	Subcultures: Blood agar anaerobic
Chromic acid 8%	5	2	2	+	+	+
Hydrochloric acid 8%	contact	2	2	+	+	+
Sulphuric acid 8%	contact	2	2	+	+	+
Trichloracetic acid C. P.	contact	contact	9½	+	+	+
Tannic acid 10%	15	15	15	+	+	+
Silver nitrate 20%	contact	contact	contact	0	+	+
Silver nitrate 10%	contact	contact	contact	0	+	+
Silver nitrate 5%	contact	contact	contact	0	+	+
Silver nitrate 3%	contact	contact	contact	0	+	+
Silver nitrate 1%	30 sec.	30 sec.	30 sec.	0	0	0
Protalgar 2%	15	15	15	+	+	+
Neosol	15	15	15	+	+	+
Cresatin	15	15	15	+	+	+
Campho-phenique	15	15	15	+	+	+
Zinc chloride 10%	2½	15	15	+	+	+
Copper sulphate 10%	15	15	15	+	+	+
Copper sulphate sat. sol.	contact	contact	15	+	+	+
Sodium perborate sat. sol.	15	15	15	+	+	+
Hydrogen peroxide full strength	15	15	15	+	+	+

Drugs	Spirochetes	Vibrios	Bacilli	Subcultures		
				Rosenow's brain broth	Blood agar	Blood agar anaerobic
Hydrogen peroxide and potassium permanganate	15	15	15	+	+	+
Dakin's Solution	contact	15	15	+	+	+
Sol. aromatic chlorazene powder 1:64	6¼	15	15	+	+	+
Lugol's solution	contact	contact	15	0	0	0
Tr. iodine U. S. P.	contact	contact	contact	0	0	0
Churchill's iodine	contact	contact	contact	0	0	0
Talbot's iodine	contact	contact	contact	0	0	0
25% aqueous iodine	contact	contact	contact	0	0	0
Bico	15	15	15	+	+	+
Methyline blue 1%	5	15	15	+	+	+
Acriviolet 1%	4½	10	10	+	+	+
Mallophene 2%	15	15	15	+	+	+
Sulfanilamide	15	15	15	+	+	+
Mercurochrome 2%	15	15	15	+	+	+
Mercurochrome 5%	contact	15	15	+	+	few
Tr. metaphen (untinted)	contact	contact	contact	0	0	0
Tr. metaphen (tinted)	contact	contact	contact	+	0	0
Metaphen 1:1000	15	15	15	+	+	+
Mercuric cyanide 1%	3½	9	15	+	+	+
Mercuric chloride 1:2000	15	15	15	+	+	+
Merthiolate 1:1000	6	2½	15	+	+	+
Bismuth sodium tartrate 1.5%	contact	3 sec.	5 sec.	+	+	+
Same in glycerin	0-15	1½-10	5-15	+	+	+
Potassium bismuth tartrate 50% in glycerin	15	15	15	+	+	+
Bismarsen 10%	contact	5	15	+	+	+
Fowler's solution	10	10	15	+	+	+
Fowler's mixture	15	15	15	+	+	+
Aldarsone sat. sol.	contact	15	15	+	+	+
Tryparsamide 10%	15	15	15	+	+	+
Mapharsen 5%	½	5	15	+	+	+
Mapharsen sat. sol.	contact	contact	15	+	0	0
Sulpharsphenamine 25%	contact	10	10	+	+	+
Neoarsphenamine 10%	15	15	15	+	+	+
Neoarsphenamine 20%	contact	3	15	+	+	+
Arsphenamine 10%	contact	contact	contact	0	few	few
Same in glycerin	5-15	8-15	15	+	+	+
Arsphenamine diglucoside 10%	contact	contact	contact	+	few	few
Emetin hydrochloride 20%	15	15	15	+	+	+
Kamillosan	15	15	15	+	+	+
Caroid	15	15	15	+	+	+
Hexylresorcinol full strength	15	15	15	+	+	+
Oxyquinoline sulph. 1%	3¼	3¼	15	+	+	+
Same 10%	contact	contact	15	+	+	+
Sodium ricinoleate 2%	10	15	15	+	+	+
Castile soap 2%	15	15	15	+	+	+
Same sat. sol.	contact	15	15	+	+	+
Sodium citrate 2%	15	15	15	+	+	+
Argyrol 20%	contact	contact	15	+	+	+
Glycerin	Too viscid to test			+	+	+

(The author wishes to acknowledge his indebtedness to Dr. J. L. T. Appleton, Jr., Dr. Katherine Polevitsky, Mrs. Carrie K. Bryant, and Dr. Wallace McNab for valuable suggestions and aid.)

Medical Arts Building.

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* * *

What Are We Waiting For?

In 1844, nearly one century ago, according to the records of dentistry, Dr. John M. Riggs began treating peridontal disease. He treated an advanced case at a clinic before dentists in 1867, and two years later at a meeting of the Connecticut Valley Dental Association stated that the above almost hopeless appearing case, *now* represented a radical cure.

In 1898, Dr. D. D. Smith made his first presentation of the subject and stated in January, 1903, that "Alveolar pyorrhea is readily amenable to intelligent treatment when it is instituted before the inflammatory process has progressed to hopeless destruction of the supporting alveolar tissue." He cites in his writings many instances of systemic disease relieved and cured by successfully relieving the mouth of infection.

In 1913, Dr. Thomas Hartzell reported his findings in 1,020 cases of mouth infection to the American Medical Association, calling attention to the relation of this condition to its general systemic effects, and stated his belief that one case in every ten in which severe constitutional lesions occur, are traceable to mouth infections.

In 1914, the American Academy of Periodontology was founded upon the experiences, convictions, and demonstrations of the above, and many other pioneers who *knew* that periodontal disease could be prevented, controlled, and cured. We are still repeating the same phrases, offering the same proofs, and only slight changes and improvements in our treatment methods. These diseases continue to take the same toll of teeth, and the mouths of medical and dental patients reek with infection. The average dental school faculty is still luke-warm in their interest in student instruction in periodontology. Dental students apologize for their interest in the subject, if they have any at all. We continue to place expensive restorations in unhealthy mouths and discount our obligations in preventive measures.

Are we again waiting for some medical man to call *our* attention to an appalling neglect in *our* own highly specialized field of dentistry?

[SYMPOSIUM*]

Undergraduate Instruction in Periodontology

By A. W. BRYAN, D.D.S.

Iowa City, Iowa

IN THE report of the *Curriculum Survey Committee of the American Association of Dental Schools* there is a chapter entitled, "The Objectives of Undergraduate Dental Education." It states that program of undergraduate dental education should aim at training students in order that they may (a) be competent in the maintenance of oral health and the treatment of oral diseases, disorders, and deficiencies, with understanding and appreciation of the relationship between oral and systemic conditions in health and disease; (b) cooperate effectively with persons engaged in allied fields of service; (c) have interest in, and desire for continuing professional study after graduation; (d) practice dentistry with due regard for its social, economic and ethical relationship; and (e) coöperate effectively in community life."

It is gratifying to note the emphasis placed by the Survey Committee upon the biological phases of undergraduate education in this broad statement of objectives and to observe that same emphasis throughout the discussion of the subjects that make up the course of study. Not many years ago dental colleges paid little attention to pathology and less than that to prevention; the main objective seemed to be toward perfection in mechanical ability and restorative procedures. In 1910 a member of an allied group aroused the profession by charges of gross neglect and of contributing to systemic ill health by ignoring the principles of hygiene. Regardless of justification for the charges, and regardless of the attitude of the profession toward focal infection in the time that has intervened, it is true that the dental profession was jolted out of a complacency that made it content to see only mechanics, and to ignore the biological phases of practice. Since that time increasing attention has been given to prevention, pathology, and therapeutics, as well as to the building of a firmer foundation through knowledge of the basic sciences. In the development of this better program periodontia has been given some consideration. Twenty-five years ago in most colleges, instruction in the treatment of supporting tissue disease consisted largely in a superficial prophylaxis and the "dabbing" on of some iodine preparation and the use of an astringent mouth wash. Student requirements included a given number of "points" in "gum treatment." Probably some in this group remember in their student days when they inveigled their room-mate into submitting to a few applications of tincture of iodine in order that a requirement might be fulfilled. But modern instruction in periodontia is gradually assuming the scientific basis that it deserves and most of the dental schools are no doubt making an effort to adequately prepare their students to render a high type service to their patients.

In the consideration of the subject of this symposium the questions that arise are first, what should be taught; and second, when should it be taught. Before discussing course content let us say something about the early introduction of the students to matters of oral health. The earlier in the dental course that the vision of preventive dentistry can be presented, the better. It is a regrettable fact that most of our dental schools have done little in the past to orient the student in such a way that he catches a glimpse of the preventive side of dentistry before he reaches the clinical years. One of the first things we do to the freshman dental student is to hand him a set of edentulous casts and ask him to construct a set of dentures. His first view of dentistry is one of a complete wreck. After he has completed that piece of work we start him on a few individual crowns

*Read before the American Academy of Periodontology, Atlantic City, N. J., July 8, 1937. (The papers comprising this Symposium were written by members of the faculty of three dental schools, viz. University of Iowa, Medical College of Virginia and Baylor University.)

and some bridge work; things are getting better,—this is only a partial wreck. We keep him at this until he reaches the clinical years and then he begins to see the biological phase of dentistry. But the picture of lost tissue and restoration has been so indelibly impressed upon his mind that it is sometimes difficult to arouse interest in the possibilities of prevention, and especially in the importance of maintaining health of supporting structures of the teeth. Why do we place so much emphasis upon *teeth*, and so little upon what holds them in place?

It seems to me that the best way to interest beginning students in oral health is to make them conscious of their own mouth-conditions. For several years at the institution with which I am associated we required that each freshman student appear for an examination and diagnosis and advice on the care of his own oral cavity. The entire class was given a course of lectures on oral hygiene and prevention. Unavoidable changes have caused a temporary abandonment of that program but I firmly believe that it did more to give the students a balanced vision of dentistry than anything we have done. As an addition to that program I believe it would be well to have freshman students in small groups visit the preventive and periodontia sections of the clinic to see what results can be accomplished in prevention and in therapeutics.

Now we come to a consideration of what shall the student be taught in periodontia. For a long time Dr. J. O. McCall has maintained that a course in the technic of the use of prophylactic and scaling instruments should be given along with other technic courses before they reach the clinical years. I see no reason for objection to this procedure and no doubt some schools have already adopted that plan. In most instances it would require only a little change in present procedures, such as mounting the roots of technic teeth, now being used for other purposes, in rubber tubing and placing small bits of cement or other material on the roots to represent concretions and roughening. It should prepare the student to handle his prophylactic instruments more skilfully on his first cases. A student, however, no doubt acquires dexterity in all of his manipulative procedures, even though he does not handle every type of instrument.

The foundation for manipulative work in periodontal disease is laid in the instruction in so-called prophylaxis. With most of the various instruments now on the market the technical procedures are the same for pocket scaling on cemental areas as it is for crown surfaces, with this difference, working where the instrument can be seen or where it can be guided only by touch. I consider, therefore, that special emphasis should be placed upon exacting training in prophylactic procedure. If a student is taught to know when the crown of a tooth is smooth, by the same sense of touch he will know when cemental areas in pockets have been properly finished. I see no reason why students should not be required to complete a prophylactic treatment for every patient assigned to them for any type of operative work. They will then be assured of a variety of pathological conditions, ranging from mild gingivitis to the severest type of dental periclasia.

I believe that students should be required to do a minimal amount of work in each of the major types of periodontal disease. That would include several cases each of acute Vincent's infection, chronic Vincent's, severe gingivitis, and cases with pocket formation. He should also have as much experience in balancing the occlusion as possible, because, regardless of the difference in opinion as to the importance of occlusal trauma, it certainly must be considered in the therapeutics of many cases.

One of the biggest problems to be determined by the teachers of periodontia is the method of treatment to be followed. The advocate of the conservative method is criticized for not using the surgical, and *vice versa*. Some of the new converts to electro-coagulation are claiming that neither is right. It is my belief that rational therapeutics in any disease rests upon the removal of causes. The so-called conservative method *does* consider the causes, and is fundamental to the success of any other method of treatment. In other words, surgery and electro-coagulation are supplemental to the practice of conservative methods in that the *results* of the disease processes must be removed as well as the causes. The operator who considers only the removal of unattached tissue as the rational treatment of dental periclasia has failed in

the diagnosis of the case and in the determination of etiology. Pockets are the result of the disease, not the cause. All of this leads to the statement that I believe the conservative methods of treatment should be stressed to and used generally by the students, but that the other methods should be used and demonstrated also. Students should be familiar with all recognized practices and, as they develop in skill and judgment can supplement conservative work with other methods.

Finally, I should like to stress the need for improvement in training students in diagnosis. Normality in mouth tissue is really a rare condition and, because there is present in the gingival tissues of the majority of our patients a certain amount of hyperemia, even some experienced operators look upon it as normal. But the man trained in periodontal disease knows that hyperemia is caused by some irritating factor which is too often ignored until the hyperemia becomes gingivitis. We must train our students to recognize the first signs of pathology; and it is through improvement in our course in diagnosis that the ability to do this will be developed.

I have said nothing about the didactic instruction that should be given. Periodontia is a division of pathology and whether considered in a separate course or with oral pathology, should occupy not less than a full year's lecture work of one hour each week. Much of this can be given along with chair demonstrations, thus cutting down the actual class room lecture time.

This Academy deserves much credit for stimulating in dental teachers, during the past few years, an interest in the health of the supporting oral tissues. Closer contact with schools by sending our programs to the faculty members responsible, directly or indirectly, for that phase of dental education will do much to improve the teaching of periodontia.

Problems in the Teaching of Periodontology

By HARRY LYONS, D. D. S., F. A. C. D.
Richmond, Va.

THE report of the Curriculum Survey Committee of the American Association of Dental Schools, titled *A Course of Study in Dentistry* and published in 1935, marked an important milestone in the evolution of dental education. Much was expected of this important survey. It was probably unreasonable to expect the Curriculum Survey Committee to offer solutions for all the educational ills in dentistry. To those who had this hope, it proved a disappointment. Others, not expecting as much, hailed the report with approval. It is the first effort at careful analysis of the dental curriculum and we are not yet far enough removed from it in years to appraise it in its proper perspective. It has already proven of immense value in serving as a basis for discussion. Those intimately associated with dental education are witnessing earnest discussion and experimentation unprecedented in dental education. Witness the recent programs of the American Association of Dental Schools and the feverish activities in faculty circles of most dental schools.

This group is interested mainly in that part of the report dealing with periodontia. Does it recognize periodontia as a distinct specialty? Does it suggest didactic courses limited to instruction in this subject? Are any suggestions offered regarding clinical instruction in periodontia designed to eliminate the apathy prevailing in this field in most dental schools? These questions must be answered negatively. Viewed in critical light, the survey did little to advance undergraduate education in periodontia, except to arouse extensive discussion of the problem which ultimately will bear the fruit of progress. No other body is more qualified to sponsor this study than the American Academy of Periodontology and such a project might be undertaken with profit to all concerned.

In making its survey of the dental curriculum and formulating its proposed *Course of Study in Dentistry,* the Curriculum Survey Committee appointed numerous sub-committees to study and submit reports on the various phases of dental edu-

cation. Such a sub-committee was appointed to deal with periodontology. The sub-committee on periodontology consisted of three outstanding men in dental education. However, it is pertinent to note none of these three are periodontists nor are they engaged in any phase of private clinical practice. All are full-time teachers and research workers and are far-removed from the problems of clinical practice in periodontia. These remarks are in no way intended to disparage the abilities of these individuals in their respected fields of endeavor.

The tentative report drafted by this sub-committee was submitted for criticism to eight associates; the writer was one of this. While the writer's observations added nothing constructively to the report, a number of pointed comments were made. The attention of Dr. L. E. Blauch, executive secretary of the Curriculum Survey Committee, was called to the existence of the American Academy of Periodontology and its committee on undergraduate education. The comment was made that a final report on this subject should not be drawn without first soliciting the aid and advice of this committee. The writer is of the opinion now, as he was then, that the American Academy of Periodontology should be the authoritative body on periodontology in all its phases. The influence of this body should be a potent factor in projects of this sort.

It is a far cry from the tentative report on periodontology to that phase of the final report of the Curriculum Survey Committee dealing with this subject. Marked revision was, of course, to be expected but a number of unfortunate changes were made. The original plan of the survey called for a section on periodontology. In the final report no such section is to be found. In the tentative report, the sub-committee stated that it did not wish to suggest the development of periodontology as a specialty in practice. There is logic in this contention. However, the sub-committee did state that specialization in the teaching of periodontology is highly desirable. In the final report, this contention failed to materialize. One must search the report intensively to find references to the subject of periodontology, only to find them fragmentarily associated with other phases of dental instruction.

As a basis for the discussion, it is appropriate to review the references to periodontology in the report of the Curriculum Survey Committee. In the outline of instruction in *Oral Pathology,* the periodontal diseases are assigned four (4) hours of didactic instruction and three (3) or six (6) hours of laboratory study. The influences of functional stresses are allotted an additional two (2) hours for didactic and three (3) hours for laboratory instruction. The subject matter to be covered in this short time includes a review of the physiology and the gross and microscopic anatomy of the periodontal structures. Since this is the foundation of all subsequent instruction in periodontology, one will immediately sense the inadequacy of this program. Provision for instruction in periodontal diagnosis and therapy is literally "scattered over the four corners of the earth" in the report. Under instruction in *Diagnosis and Treatment Planning,* an assignment of two (2) hours is made for "signs and symptoms of disorders of the gingivae and peridental tissues." Instruction in periodontal therapy is discussed in Chapter XX on *Mouth Hygiene and Oral Prophylaxis* and Chapter XXVI on *Oral Medicine,* the latter subject dealing with pulpal, periapical and periodontal diseases and lesions of the general oral mucosa.

The wisdom of a separate course in *Mouth Hygiene and Oral Prophylaxis* is a debatable one. The major portion of the subject matter outlined under this head falls within the realm of periodontology. To quote from the report:

> "The principles and methods of mouth hygiene and oral prophylaxis constitute an unusually important part of the prevention and treatment of diseases of the gingivae and investing tissues of the teeth. Therefore, the instruction on the two subjects should be definitely correlated. There should be an agreement on teaching the principles common to both courses, and needless duplication should be avoided."

Obviously the simplest way to avoid disagreement and duplication in education is to avoid setting up two courses to teach the same subject. This is exactly the error made by the Curriculum Survey Committee. In discussing the scope of instruction for the

course in *Mouth Hygiene and Oral Prophylaxis* the following are listed:

(a) "Cleaning and polishing teeth, both exposed and subgingival areas, . . .
(e) correction of undue occlusal stresses . . ."

This is certainly needless duplication, since these subjects are important phases of any course dealing with periodontal therapy and must necessarily be covered at length in such a course.

It is difficult to fathom the educational principles that led the Curriculum Survey Committee to deal with the therapy of pulpal, periapical and periodontal diseases in one course, titled *Oral Medicine*. These therapeutic procedures constitute widely divergent fields. As a matter of fact, no logical explanation is offered for this grouping and the course is frankly divided into the various unrelated sections. Furthermore, the term "Oral Medicine" is, among other things, uninformative, misleading and inappropriate.

Provision for undergraduate clinical practice in *Oral Medicine* is extremely meagre. The report states that clinical training in this field should include "the diagnosis and treatment of diseases of (a) the dental pulp and apical and periapical tissues, (b) the gingivae and investing tissues of the teeth, and (c) other tissues of the mouth, which do not require surgical treatment." For all this, "it is estimated that from 180 to 200 hours will be required by the student to obtain the objective of instruction." Objective number seven (7) under this subject is as follows: "To outline and execute the appropriate preventive and therapeutic treatment (local and systemic) for the diseases embraced in 'Oral Medicine' so far as the treatment and prevention fall within the field of dentistry." To the practical mind and one familiar with the problems concerned, it is apparent that an allotment or approximately three clinical hours per week during the student's clinical training of two (2) years is wholly inadequate. The above mentioned objective is, of course, idealistic and probably never attained by the most experienced clinician. However, the inadequate provision for clinical experience in periodontia is an important consideration in a study of the proposed dental curriculum. This becomes even more apparent when it is noted that of the 1489 hours scheduled for clinical practice, only 200 are suggested for clinical experience in *Oral Medicine* with probably only half of these intended for clinical practice in periodontia.

From this analysis, it is obvious that the final report of the Curriculum Survey Committee makes no provision for unified instruction in periodontology; that the subject matter usually considered under this heading is divided among a number of courses; that the total time allotted is insufficient to provide dental students with the opportunity to learn the fundamental principles of the subject; and, that the provision for undergraduate clinical experience is wholly inadequate.

These deficiencies suggest their own remedies. It is a relatively simple matter to plan adequate courses of instruction on paper. Their execution is altogether another problem and one very much more difficult to solve. More important than the detailed curriculum of an educational institution is its personnel. Herein lies the greatest weakness in dental education. A dental teacher should be, first, an adequately educated dentist with special training in his chosen field, particularly along investigative or research lines and, secondly, he should also be skilled in the art of pedagogy. Such individuals are rare, indeed. Yet, if dentistry is to take its desired place in educational spheres, teachers of this type must be developed. Universities must recognize this need and make provision for their education and training. This is dental education's most acute need. In the past, dental education has been carried on largely by avocational teachers. This is true to a great degree now. Great as is the contribution of these pioneers, the progress of dental education demands more adequately trained personnel. The field of periodontology must have its share of teachers of this type.

Greater emphasis should be placed on that phase of dental pathology dealing with the periodontal diseases. This instruction should be rationally based on adequate histologic material. Without such illustrative material, instruction lacks force and conviction. Emphasis on periodontal pathology, visually and rationally taught, is the basis on which the hope for rational thought in therapy rests. Nowhere in dentistry do so many illogical

and empirical practices prevail as in the field of periodontal therapy. It is difficult to conceive how one could support such practices were he mentally equipped with an adequate knowledge of periodontal pathology and a visual impression of the tissue changes prevailing in the various periodontal diseases.

The Council on Dental Therapeutics of the American Dental Association has been of great aid in fostering rational periodontal therapy. The reports of the Council on dentifrices, mouth washes and other nostrums advertised to have therapeutic values in the treatment of periodontal disease stand as beacon-lights in the darkness and haze covering the field of therapeutics. These reports and the text, *Accepted Dental Remedies*, published by the Council, should be utilized in the teaching of periodontology and carefully studied by every student, teacher and practitioner.

Several reports of the Council have not been made available to the profession through regular publication channels because of threats of legal suit and the conservative policy of the editor of the Journal of the American Dental Association. These reports should be made available. The profession must not fail to meet and exercise its full professional responsibility in its public trust. More liberal editorial support would materially advance the enlightening work of the Council. The American Academy of Periodontology went on record several years ago endorsing the work of the Council on Dental Therapeutics. Since there are many problems, mainly educational, of common interest to these two bodies, continued support of the Council will continue to foster rational therapeutics and instruction in this subject.

Periodontia for the Undergraduate

By SAMUEL R. PARKS, D.D.S.
Dallas, Texas

PERIODONTIA is one of the newest departments in dental schools. Being new, it has attempted to make some progress by the trial and error method and since no precedent had been set for teaching it to the undergraduate, the errors have kept pace with the trials.

Let us consider for a moment the problem in the beginning. Here was a devastating dental disease which had hardly been classified and yet was taking a toll of more than one-half of the teeth that were lost. It may be best described as being the blind spot in the eyes of dental faculties. In retrospect we now marvel at our own optical lethargy. One day we awakened to the glaring fact that we should be therapists as well as mechanics. Just why did it take us so long to realize this? Two reasons. First, dentistry was a child of the arts and mechanics. (Witness Paul Revere, the silversmith, a dental convert.) We learned to do with our hands and not so well with our minds. Later came the correlation, but still we didn't see the light. It's a long step from creative sculpturing with inanimate material to the same creative sculpturing with biological and physiological responses, but we made it. Dentistry is no longer a craft and an art only; it has added therapy to its accomplishments, but with considerable travail.

The second reason for our periodontal inertia was that the lay public had not yet demanded that we do something about it; but when they did, we arose to the challenge and got busy. What did we do? We dug up the records and writings of J. M. Riggs, D. D. Smith, and G. V. Black and Younger and seeing their admirable efforts, we redoubled ours. We prepared papers, gave clinics, and literally crammed periodontia down the throats of our sleeping brother dentists, and they began to wake up. If you don't believe they are awake periodontally, try to find a seat in the section on periodontia of the American Dental Association at any meeting any year.

Now what does all this have to do with the teaching of periodontia to undergraduates? Simply this: most educational movements start outside of schools first and then

gradually filter in. Periodontia is no exception. There are some dental schools in this country today where it is not taught in any form. In some schools it is taught by the everybody's-business-is-nobody's business method. The results are obvious.

The majority of schools, however, have installed a chair and give a definite course of instruction both in theory and in practice. In this type of school the professor is confronted with certain obstacles. He must not only teach the undergraduate periodontia directly, but he must also teach his brother members of the faculty by inference. No less than three deans of Class A dental schools have said to me within the last three or four years, "What do you talk about in periodontia to take up thirty-two hours of lecture period?"

Up to this point this paper has dealt mostly with the problem in general and with graduate dentists. Now let us consider the student. He usually gets his first exposure to periodontia the first week of the junior year, although in some schools he has an introduction to its first cousin, oral hygiene. Now what does this raw product look like after his first two years in the science, operative, crown and bridge, and prosthetic laboratories? Well, he is a young man who wants to do things with his hands. He wants to create something of a mechanical nature. He wants to convert a wax carving into a gold inlay. He wants to mix powder and liquid, and bake a beautiful porcelain jacket crown. So far so good. To be a good dentist, a student must first be a good mechanic; but a good mechanic isn't necessarily a good dentist. That's something new to the junior. "This teacher in periodontia has punctured one of my dental balloons," he says. Now he's thinking, and that's what we want him to do. We introduce the subject. We classify it. We compel him to purchase a text book. We assign articles to be read. We differentiate. We show him occlusal relationships in his fellow student's mouths. We call his attention to varying colors in the gingivae, both normal and abnormal. We teach him that the periodontium is far more important than the teeth. That a super-structure will not stand unless it is on a good foundation. That good operative dentistry often changes a diseased to a healthy periodontium. In short he must take into consideration all of the structures of the mouth; not just the teeth alone. The whole not the part must become his professional domain. After he has a good idea of the fundamentals of periodontia, we set aside a period to teach him how to sharpen his instruments, and we explain to him that nothing dulls the periodontist's enthusiasm as much as dull instruments. Now we have arrived at the time when his practical work begins. If my own experience of teaching periodontia for the last twelve years has taught me nothing else, it has taught me this one thing: that there are only three ways for an undergraduate to be taught periodontia, and the three are these:

First: tell him what to do.

Second: show him what to do by doing it yourself.

Third: have him do it himself.

These rules apply to diagnosis, treatment, and prognosis alike. Periodontia cannot be taught entirely in the lecture room. It must also be taught at the chair. A student must carry cases through to their completion. This applies to what is oftentimes erroneously called simple prophylaxis—which is never, never simple—as well as to an advanced case of periodontoclasia. That method is the only way he can gain confidence in himself to practice periodontia. If he does enough cases in this manner, he gets the proper amount of biological and physiological observation to convince him that dentistry is not all mechanics. Just think of what his difficulties are. He gets three and three-fourths years of dental mechanics and one-fourth year of dental therapeutics. In this one-fourth year he is expected to learn how to prevent the loss of more than fifty per cent of teeth which are lost. No small problem for one so young and inexperienced, but he has the background to develop into a general practitioner of dentistry with a good knowledge of periodontia. He is the product we turn out. There are many variations of him, but on the whole he is a pretty good fellow. He knows a case of periodontoclasia when he sees it.

The processes of education are slow. It has taken us about one hundred years to do it, but we have removed the blind spot of periodontia from our dental students' eyes. Now he can see, and that's at least some periodontal progress.

Report of the Committee on Nomenclature of the American Academy of Periodontology*

THE Committee on Nomenclature as appointed by the American Academy of Periodontology to report to it regarding the correct usage of terms employed in the science of periodontology, undertook as a part of its duty to obtain the opinions of those engaged in the teaching of Greek. With this in mind the following letter was drafted which, with an accompanying drawing showing the relation of the periodontal tissues one to the other, was sent to a selected group of well known Greek scholars:

"The Committee on Nomenclature of the American Academy of Periodontology presents the following problem with a request for your assistance in its solution from the standpoint of correct usage of the Greek roots.

The problem arises from a difference of opinion that has developed between groups of dentists as to the correct term to designate collectively the tissues involved when a disease long erroneously called "pyorrhea alveolaris" occurs in the mouth. Both groups agree that such a collective term is desirable and both agree that this term, when adopted, may properly serve as a source of useful derivative terms including an adjective form, a name for the disease, etc.

Three tissues constitute what are commonly referred to as the "supporting" tissues of the teeth. They are the bone, which provides the actual support of the tooth; the pericementum, a ligamentous tissue that holds the tooth in its bony socket; and the gum, a fibrous tissue that hugs the neck of the tooth and also, by extension, provides a protective covering for the bone of the tooth socket and for the cervical portion of the pericementum. The relations of these tissues to each other and to the tooth are shown in the accompanying drawings made to represent transverse and cross sections of a lower cuspid tooth. Fibers of the pericementum are attached or embedded at their inner extremity in the cementum (which is the outer layer of the tooth root) and at their outer extremity in the bone of the tooth socket. Near the neck of the tooth the fibers of the pericementum extend from their attachment in the cementum of the tooth into the body of the gum. These three tissues are thus seen to be intimately associated and mutually interdependent.

These three tissues of common embryological origin, are intimately associated in function and are collectively involved when so-called pyorrhea attacks. The question is, shall this tissue group be called periodontium or parodontium (paradentium has been proposed as an alternative term using the Latin root forms)? The organizers of this society favored the former term and incorporated it into the name of the Academy at the time of its founding in 1914. The derivative "periodontoclasia" was formulated to designate the disease formerly called "pyorrhea." About ten years later the term "paradentosis" was advocated by another group to designate the disease and still later the terms "parodentium" and then "parodontium" were proposed by the same group.

We are not here concerned with the suffixes "osis" and "clasia," however, but are anxious to learn which is the correct prefix. Proponents of the prefix "peri," meaning *around*, believe that since the alveolar bone and the gum completely surround the tooth and are so intimately related to it, this prefix is correct even though the bone does not make contact with the tooth and only a small part of the gum makes such contact. The proponents of "para" contend that this prefix meaning *near, along side of*, is the correct one. They claim that "peri" can only refer to a tissue in immediate contiguity with the tooth; thus they propose to use the term periodontium to designate only the ligamentous tissue that is directly attached to the tooth root.

What this committee wishes is to secure the opinion of Greek scholars as to the merits of the argument. There is no desire to obtain support for a personal predilection, but rather to help establish the correct term in scientific usage."

*Read before the American Academy of Periodontology, July 8, 1937. Atlantic City, N. J.

To this letter the following replies were received:

"The prefix *para* means 'by the side of', 'beside,' 'alongside of.' This prefix is in good use in about eighty-five scientific terms in anatomy, natural history and pathology. In anatomy and natural history, it is used relative to an organ or part situated beside or near or standing in some subsidiary relation to the second element. In pathology, it denotes diseases affecting such parts. Most of the eighty-five usages are pathologic and, in composition, the usage seems to be prevailing of a meaning that runs into faulty, disordered, perverted, simulated, etc. *Peri* in composition, means 'round,' 'around,' 'roundabout,' 'about.' In composition, as an adjective, there are about seventy-five words in good scientific anatomic and pathologic use meaning 'surrounding,' 'enclosing or pertaining to.' I might mention among them: periarticular, pericereb and perigastric. There are about sixty nouns in good scientific usage in composition with *peri*. The words denote a part or organ surrounding or enclosing that of the second element. A number of these words are pathologic terms, and all the words in that group have to do with diseases connected with 'connective tissue.' Pericolitis would probably come first to mind. As a good comparison, I might mention two words: 'paradenitis,' meaning inflammation around a gland, and 'periadenitis,' which means inflammation of the connective tissue around a gland. In my judgment, both adjectives and nouns compounded with *para* fail to describe tissues or diseases which surround the element. *Para* can mean anything near or in the neighborhood of. *Peri* means that also, but has the additional meaning of something that surrounds; nor does it need to mean a connecting envelop or tissue. Its meaning can extend further than the first enveloping tissue."

(Signed) R. V. D. Magoffin, Professor of Greek, New York University.

"In *re* a choice between the terms periodontium and parodontium, (paradentium as being so obviously a hybrid word half-Greek and half-Latin, I would rule out), my purely personal opinion is as follows:

"While as a philologian I agree that it would be fine to have such terms nicely accurate, I can't help thinking that language is almost purely a matter of convention—that is, 'coming together' and therefore 'agreeing'—and that there should be no getting away from the decision of such a convention as your Academy may agree on.

"However, my familiarity with Greek prefixes and their use in English words makes me feel that *peri* is clearer and certainly more explicit than *para* (cf. paranoiac, parabola, parable, paradox and paragon, where the prefix means nothing to nine people out of ten as against 'around the periphery,' peripatetic, etc.) I certainly wouldn't worry as to whether this peripteral, periplast or periblast touched the whole body or only its neck. It certainly (to use plain English) 'surrounds' it. Furthermore to use the term 'side of' or 'beside' which is what *para* means is 'beside the mark' to say the least."

(Signed) Carroll N. Brown, Professor of Classical Languages, The College of the City of New York.

Harvard University
Cambridge, Mass.

"In answer to your letter and accompanying explanation of November 25, I must say that there is not much to choose between the terms parodontium and periodontium as a general description of the parts surrounding a tooth, although I incline somewhat to periodontium. The Greek use of the preposition *peri* is very wide, and may include what surrounds at a distance as well as what envelops in close contact.

"When, however, you come to describing the process of inflammation, if that is what 'pyorrhea' is, I am moved by the consideration that *para*—as a prefix frequently means 'going wrong,' like our prefix *mis-*, and therefore, parodontitis would exactly express it."

(Signed) C. B. Gulick.

Tyler House
Smith College
Northampton, Mass.

"This afternoon I showed your letter and drawing to the older members of my department and asked their opinion. We are unanimous in voting for *peri*. In our opinion *para* is too vague and might easily be misleading."

(Signed) Agnes Carr Vaughan
Department of Greek.

Department of Greek
Hamilton College
Clinton, N. Y.

"After reading the inclosed statements in connection with the diagram I might venture an opinion as follows:

"To the layman, periodontium gives a picture, because the tooth is bedded in something, and one thinks of that something as being about the tooth. There is no linguistic basis for saying that *peri* must connote immediate contiguity in a technical sense. That would be to import something into the Greek *peri*.

"The term parodontium does not, to a layman, express so much, since *alongside the tooth* says less than *around the* tooth.

"It is worth considering that while *peri* is a common prefix in anatomical terms, with a positive local force, *para* has usually moved away from the local and concrete toward the abstract.

"Paradentium is a form that would displease a purist, since the prefix is Greek and the root Latin."

(Signed) Edward Fitch

University of Pennsylvania
The College

"If it is essential that the compound word connote the idea that the three tissues involved surround or incase the tooth, then the prefix should be 'peri.' If, however, the idea to be conveyed is simply that these tissues are in close proximity to the tooth, then the prefix 'para' would be proper."

(Signed) R. B. Burke

The Committee then addressed a letter to Dr. Marcus L. Ward of the University of Michigan who was known to be engaged in in a study of nomenclature to which he replied in part as follows:

"I have included the two pages from my notes which I think have a bearing on your work. You will note that we have thrown out -osis and -clasia as suffixes suitable for use in connection with what we have formerly called 'pyorrhea.' It is conceivable, of course, that certain aspects of what we call pyorrhea might utilize the suffixes, -clasia and -osis. These two suffixes, however, have too specific a meaning in medicine to be suitable ones for the use which has been given them by certain groups in dentistry."

"The two pages referred to are as follows:

"*Tooth*

"Taken from the Latin, dens. Sometimes used as a root. Taken from the Greek, odous. Sometimes used as a root.

"*Para—*

Greek origin. In chemistry it denotes close relation. In biology it indicates comparison with something else. In pathology it signifies a condition differing in quality from normal. Ordinarily it signifies alongside.

"*Peri—*

Greek origin. Signifies around. It is the equivalent of circum in Latin.

"Peri—as a prefix in connection with what is designated as pyorrhea is not suitable on account of its general use in medicine in connection with tissues which completely invest a part, such as the pericardium. Pyorrhea not necessarily involves the entire circumference.

"*Parodontium*

Parodontium will be used to designate the three tissues, the alveolar process, the peridontal membrane, and the gingiva. The word is made from 'para' and 'odous,' but the rules for formation of words from Greek prefixes and nouns provide for the dropping of the vowel from the prefix when the noun begins with a vowel, hence parodontium instead of paraodontium. There are a very few exceptions to this rule, however, and one of them concerns the use of the prefix peri—.

"*Periodontal—peridental*

These two terms illustrate the spelling when the Greek 'odous' and the Latin 'dens' are used for tooth. Good practice seems to demand that when other things are equal, the prefix and noun should both be from either Greek or Latin, hence *periodontal*, rather than peridental, will be used. There are some precedents from the combination of the two languages in the construction of such terms, but they will be treated as exceptions and not the rule.

"*—osis*

This is not a good suffix to use to construct terms which are used as synonyms for what is designated as pyorrhea, or those used in describing pyorrheal conditions. It has, through extensive usage become fixed in medical literature as an indicator of non-inflammatory conditions, e. g., nephrosis,

meaning a non-inflammatory condition of the kidney, and nephritis, an inflammatory one. It is also used in connection with conditions found in the bones, such as osteosis, pericementosis, etc., etc.

"*—clasia*

This is not a good suffix to use in connection with pyorrhea on account of the specific use of it in such terms as osteoclasia, meaning fracture or refracture of bones, and osteoclast, which is concerned with absorption and removal of bone.

"*—itis*

This suffix is usually a specific one used to construct terms which mean inflammation. It may, therefore, be used as a synonym in certain cases for disease, but it should be remembered when using it that any deviation from normal, may be inflammatory or non-inflammatory.

"*—ics* and *ic*

—ics will be used to designate both sciences and systems of doing things. Examples:

physics, mathematics, hydostatics, accoustics, dynamics, orthodontics, prosthodontics, pediatrics, statistics, athletics, politics, clinics, technics, etc., etc.

The difficulty that has been encountered in the use of this suffix in dentistry has been due to attempts to confine its use to the sciences and to associate its usage with the suffix —ic which is a specific suffix for the conversion of many nouns to adjectives.

"*—ic* and *—al*

—ic will be used as an adjective formation in preference to —al except in the few cases where euphony makes its inadvisable.

Examples: anatomy—anatomic; histology —histologic; metal—metallic; electricity—electric; orthodontics—orthodontic; prosthodontics — prosthodontic; technics — technic."

In response to a letter addressed to Dr. L. Pierce Anthony, Chairman of the Committee on Nomenclature of the American Dental Association, the following suggestions were offered:

"With regard to nomenclature, I certainly trust that your committee will take some definite action regarding a number of periodontia terms that are now very carelessly used and in a manner in which it is quite difficult to understand just what is meant.

"I refer particularly to 'periodontium' or 'peridentium' and 'parodontium' or 'paradentium.' The Committee of the A. D. A. has endeavored to make the distinction of 'peridentium' or 'periodontium' as the same as what we have always known as the peridental membrane. For 'paradentium' or 'parodontium' we have endeavored to have this term used as indicating the investing tissues of the teeth. Some authors have made this distinction, but many have not and there are numerous instances which have come under my eye in the last few years in which it was impossible in the original manuscripts to determine whether the author meant the peridental membrane or the investing tissues.

"Also, the A. D. A. Committee has adopted the term 'paradentosis' as the name for our old friend 'pyorrhea alveolaris.' The purely Greek term 'parodontosis' has also been used and I think is perfectly correct. We have, however, adopted the term 'paradentosis' in deference to the wishes of our European friends. There are also two terms being used that I should like your committee to define and offer some recommendation on if you see fit, namely 'periodontoclasia' and 'parodontoclasia.' It may, however, not be necessary if your committee fully approves the term 'paradentosis.' "

The Committee's next move was to get in touch with the National Conference on Nomenclature of Diseases. Under date of March 11, 1936, the following letter was received from its Executive Secretary:

"I have now examined the usage in medical terms commencing with the prefixes *peri—* and *para,* as exemplified in a considerable number of these terms. We can ignore such terms as *paraplegia, paraldehyde* and *paracusia,* because the prefix is here used in quite different senses from that under discussion.

"The usage in regard to these prefixes is generally inconsistent in medicine; sometimes terms are used interchangeably, as periappendicitis and paraappendicitis, for the same disease. Many such terms are not in common use and a large number of those listed in medical dictionaries are unfamiliar and are not to be found in standard textbooks. There are, however, a number of

examples of each, the meaning of which is well established and constant: *pericardium, pericarditis; periosteum, periostitis; parametrium, parametritis; parovarian (paroophoron) cyst; parasternal line.* Whereas *pericarditis* is inflammation of the *pericardium,* there is no such derivation for *peribepatitis* or *peribronchitis.* The best example of the accurate distinction between the uses of the two prefixes is in the terms *perimetritis* and *parametritis:* the former is defined by Stedman as an inflammation of the peritoneal covering of the uterus, and the latter as an inflammation of the pelvic cellular tissue which lies beside the uterus. These terms are so defined in standard text-books also.

"It would seem fairly well established that, in spite of inconsistencies and ambiguities, the tendency in medicine is to favor the use of *peri* for tissues which ensheathe, and of *para-* for tissues which lie beside.

"The use of *para—* to indicate embryological relationship should not be confused with the use just defined. The prefix is used differently in the words *parametrium* (tissue beside the uterus) and *parovarium (paroophoron)* (structures embryologically related to the ovary—but not necessarily near it after full development). At the same time, there must be some relationship or the word would have no meaning. Parametritis is not only an inflammation of cellular tissue near the uterus; it affects the structure, position and function of the uterus. The term *parametrium* implies more than juxtaposition; it is used in the sense of the supporting structure (or part of it) of the uterus.

"From this discussion may be drawn the inference, if not the conclusion, that the pericementum is analogous (etymologically at least) to the perimetrium, and that the supporting structures of the tooth are analogous to the parametrium. It would seem therefore, that the term *parodontium* is to be preferred as a name for the supporting structures of the tooth, not only because of the actual meaning of the Greek roots, about which there is no question, but for the much more cogent reason that physicians tend to show such a preference in words containing these prefixes."

(Signed) H. B. Logie, Executive Secretary

The foregoing correspondence was next submitted to Dr. J. L. T. Appleton of the Thomas W. Evans Museum and Dental Institute of Dentistry, University of Pennsylvania, who replied as follows:

"I have just read the correspondence between Doctor Logie and Doctor McCall relative to the words 'periodontium' and 'parodontium.'

"As a result I collected from the unabridged Standard Dictionary the explicitly and implicitly anatomical terms, with the prefixes 'peri' and 'para' (see accompanying list of words).

Para-

para appendicitis—peritoneum near the appendix
para keratosis—abnormal development of the horny, outer layer of the epidermis
para cerebellar—lateral part of the cerebellum
para chordal—near the notochord
para colon—resembling the colon bacillus
para colpitis—external coat of vagina
para colpium—connective tissue about the vagina
para condyloid—near a condyle
para cone—cusp in front and on outside of an upper tooth of a mammal
para cystitis—parts about the bladder
para adenitis—surrounding a gland
para dental—in the immediate region of a tooth
para didymis—near the epididymis
para flagellum—a supplementary flagellum
para flocculus—smaller hinder portion of the flocculus (cerebellum)
para mastitis—tissues near the mammary gland
para mastoid—near the mastoid portion of temporal bone
para median—near the median line
para mesial—near the median line
para nephric—beside the kidneys
para nephritis—suprarenal glands
para nucleus—an accessory nucleus, nucleolus
para pineal—near the pineal gland
para plasm—formation or form of morbid tissue
para pleuritis—pain in the side or chest
para plexus—choroid plexus of the lateral ventricle
para pophysis—elevation on the side of a vertebra on which the head of a rib fits
para proctitis—tissues about the rectum
para rectal—beside the rectum
para salpingitis—cellular tissue adjacent to a Fallopian tube
para sinoidal—near a sinus
para sternal—near the sternum
para sternum—abdominal ribs taken collectively
para synanche—parotid gland
par oid—near the ear
par ovarium—epoophoron
par ulis—beside the gums
par umbilical—near the umbilicus
par occipital—near the occiput
par odontides—gum-boils
par odontitis—tissues in which a tooth is embedded

N. B. parodontium—not given in Standard Dictionary

par olivary—a nucleus in the medulla oblongata, near the oblivary body
par omphalocele—hernia at the side of the umbilicus
par onychia—root of a nail
par oöphoritis—near an ovary
par ophthalmia—surrounding an eye
par oral—beside the mouth
par ochis—part of epididymis
par osteal—near a bone
par otic—near the ear
para synovitis—tissues around a joint
para tarsium—the side of the tarsus
para thyroid—near the thyroid gland
cf. parasyphilis
paratrichosis
paratuberculosis
para urethral—near the urethra
para vaginitis—tissues about the vagina
para vesical—near the bladder
par ectama—inordinate distension, e. g. of the heart
par encephalon—cerebellum
par epigastric—pertaining or close to the epigastrium
par ethmoid—situated beside the ethmoid, e. g. parethmoid bone
par isthmitis—sore throat, tonsilitis
Peri-
peri acinous—extending about an acinus
peri adenitis—tissues about a gland
peri adventitia—investing the adventitia
peri aortic—encircling the aorta
peri appendicitis—peritoneal investment of appendix
peri arterial—surrounding an artery
peri arthritis—tissues around a joint
peri blast—protoplasm about the nucleus of a cell
peri branchial—surrounding the gills
peri bronchial—about the bronchial tubes
peri bursal—surrounding a bursa
peri caecal—surrounding the caecum
peri capsular—extending about a capsule
peri cardial—surrounding the heart
peri cementum—a membranous layer enclosing the root of a tooth
peri cephalic—about the head
peri cerebral—surrounding the brain
peri cholecystitis—tissues surrounding the gall bladder
peri chondrium—vascular membrane that envelops the non-articular surface of a cartilage
peri chord—sheath of connective tissue about the notochord
peri choroidal—surrounding the choroid coat of the eye
peri sigmoiditis—peritoneum about the sigmoid flexure
peri sinusitis—duramater about the cerebral sinuses
peri thelium—external sheath of connective tissue that surrounds a small blood-vessel
peri thoracic—surrounding the thorax
peri tonsillar—extending about a tonsil
peri tracheal—surrounding the trachea
peri typhlitis—cellular tissue surrounding the caecum
peri ungual—surrounding the nail
peri ureteric—surrounding the ureter
peri urethral—that which lies about the urethra
peri uterine—situated about the uterus
peri vaginitis—paracolpitis, q. v.
peri vascular—surrounding a vessel
peri venous—surrounding a vein
peri vertebral—surrounding a vertebra
peri vesical—about the bladder
peri oöphoritis—peritoneum connected with the ovary
peri optic—surrounding orbit of the eye
peri oral—around the mouth
peri orchitis—serous coat or tunica vaginalis that surrounds testis
peri osteum—fibro-vascular membrane that invests and nourishes the bone
peri osteoalveolar—of or pertaining to the periosteum (as of the jaw bone) and the sockets of the teeth
peri otic—surrounding the inner ear; specif. relating to the bony structure enclosing the labyrinth
peri pancreatitis—tissues about the pancreas
peri phimosis—paraphimosis
peri phlebitis—external coat of a vein
peri pleuritis—subserous areolar tissue of the costal pleura
peri proctal—celluar tissue around rectum or anus
peri prostatic—surrounding the prostate gland
peri rectal—around or near the rectum
peri rhinal—surrounding nose or nasal fossae
peri salpingitis—peritoneum surrounding Fallopian tube
peri colitis—tissues around the intestine
peri colpitis—cellular tissue around the vagina
peri corneal—surrounding the cornea
peri cowperitis—tissues around Cowper's glands
peri coxitis—tissues around the hip joint
peri cranium—periosteum of the external surface of the cranium
peri cystic—pertaining to the region around a bladder or cyst
peri cystium—the outside venous tissue of a cyst
peri cystomatitis—capsule of an ovarian cyst
peri dental—surrounding the teeth
peri desmium—sheath of a ligament
peri didymis—strong, fibrous investment of the testis
peri encephalitis—membranes surrounding the brain
peri enteric—surrounding the enteron
peri esophagitis—cellular tissue around the esophagus
peri folliculitis—tissues about a follicle
peri ganglionic—surrounding a ganglion
peri gastritis—peritoneal coat of the stomach
peri glandular—surrounding glands
peri glial—surrounding the glia cells
peri glossitis—mucous membrane or villous coating surrounding the tongue
peri glottic—situated around or near the glottis
peri gnathic—surrounding the jaws
peri gonadial—of or relating to the spaces surrounding the reproductive glands of animals
peri hepatic—investing the liver
peri hepatitis—portion of peritoneum that covers the liver
peri insular—lying around the insula, e. g. the island of Bell
peri karyon—cytoplasm of a cell
peri laryngeal—around or near the larynx
peri lenticular—about or around the optic or other lens
peri lymphadenitis—tissue about a lymph gland
peri mastitis—tissues about the mammary gland
peri medullary—surrounding the medulla oblongata, spinal cord, or bone marrow
peri metrium—the peritoneum that covers the uterus
peri myelitis—membranes enveloping the spinal cord
peri mysium—connective tissue uniting the bundles of muscle fibers and in which they are embedded

peri nephritis—cellular and fibrous tissues around the kidney
peri nephrium—capsule of adipose tissue that invests the kidney
peri neural—around a nerve or nerve-bundle
peri neurium—connective tissue investing one of the bundles of fibers composing a nerve
peri odontal—surrounding a tooth or the teeth
peri odontitis—lining membrane of the socket of a tooth
peri odontium-odontoperiosteum—the periosteum that lines the socket of the tooth
peri onychium—cuticle covering the roots of the nails

"In going over these lists of words one sees repeatedly that the prefix 'para' is associated with the meanings:—near, about, surrounding, besides, adjacent to, and at the side of. On the other hand the meanings associated with the prefix 'peri' are: about, surrounding, around, investing, encircling, enclosing.

"Usage, despite the impressions of Dr. Logie and Doctor Marcus L. Ward, favors the prefix 'peri' to denote anatomical relations such as those that exist between a tooth on the one hand and its investing structures on the other.

"Anatomy deals with space relations, and geometry is the abstract science of space relations. It is, therefore, natural that geometrical concepts were and should be influential in determining anatomical usage of words. The two, best known geometric terms with these prefixes are probably—'perimeter' and 'parallel.' The primary and essential feeling one has of these words is that 'parallel' means 'alongside of' and that 'perimeter' means 'around.'

"When it was a question which prefix to employ in describing anatomical relations, it is clear that the primary geometric concept usually determined the choice.

"Although my first preference was for the word 'parodontium,' I have been convinced that this term should be replaced by the word 'periodontium' for the following reasons:

(1) the opinion of the Greek scholars.

(2) the actual usage in anatomy and in medicine, as reflected in the word lists from the Standard Dictionary, mentioned in this letter.

(3) the usage in this country in dental circles, as reflected in the name, Academy of Periodontology.

"The word 'periodontium' has been used to designate the alveolodental periosteum. This fact does not seem to be a serious objection to using the word 'periodontium' to apply to *all* the investing structures of the tooth; because (1) language offers many instances of extension of meaning as well as contraction of meaning and (2) the usage of 'periodontium'—alveolodental periosteum, is relatively rare, and an extension of this meaning would be noticed by relatively few dentists and to these few it would not likely be ambiguous.

"Whichever term (periodontium or parodontium) is finally chosen, it should be used consistently and uniformly. It would be inexcusable to attempt a compromise—e. g. to adopt 'parodontium' for the tissues involved but to retain the word 'periodontology' for the study of these tissues and their diseases and for the specialty dealing with these diseases.

"The obviously logical procedure is to choose the anatomical term by which the tissues in question are to be designated, and to derive from that term such other terms as are useful. For the reasons given above the word 'periodontium' seems distinctly preferable. From it one will easily get:—periodontosis and periodontitis with their adjectives, and periodontology."

(Signed) J. L. T. APPLETON.

From the foregoing correspondence it will be observed that Dr. Appleton and the six professors of Greek are unanimous in their opinion that the prefix *peri* as applied to periodontia is preferable to that of *para*, while Drs. Ward, Anthony and Logie all favor the latter prefix.

In a letter from Dr. John Oppie McCall, a member of the Committee, and who after reading Dr. Logie's letter of last year was inclined to the use of the prefix *para* in certain instances and that of *peri* in others, writes as follows under date of May 24, 1937:

"Since the last meeting of the Committee on Nomenclature, I have given some thought as to what the final report of our committee should be on the controversial points that have come up in recent years.

"A year ago I was much impressed with the arguments advanced by Dr. H. B. Logie,

Executive Secretary of the National Conference on Nomenclature of Disease. You will recall that he stated that according to present tendency in medical nomenclature the use of the prefix 'para' to designate tissues adjacent to but not immediately contiguous to the tooth, would be in order. On the basis of this, I suggested offering a somewhat mixed terminology, retaining some of the older and well-established terms, such as 'periodontia,' 'periodontist,' etc., and adding some new terms, such as 'parodontium,' 'parodontitis,' etc.

"On further reflection, I am inclined to believe that this is not sound procedure. Nor, furthermore, do I feel that the medical opinion expressed takes into account sufficiently the very intimate relationships existing between the various supporting tissues of the teeth; I question, in other words, its validity. Under the circumstances, I think we can most safely follow the opinions rendered by the various Greek scholars consulted, especially since these have been unanimous in their support of our earlier belief that the prefix 'peri' was the preferable one to use.

"In support of this I note the opinion expressed by Appleton to you. I also draw attention to the universal use in the contemporary literature of the terms 'periodontist' and 'periodontia.' Of the terms beginning with 'para,' we see chiefly the hybrid forms 'paradentosis,' etc., which I feel are quite out of place because of their dual derivation; they are used by only a small group in the profession in this country.

"In view of the foregoing, I suggest that our committee recommend the use of the Greek prefix 'peri' and the Greek root form 'odont' in the development of terms having to do with the enveloping and supporting structures of the teeth."

(Signed) JOHN OPPIE McCALL.

After a two years' study of the subject of nomenclature as related to the science of periodontology, in which an earnest attempt has been made to obtain the most authoritative opinion regarding the use of the prefixes, *para* and *peri*, the committee has been forced to the conclusion that the prefix *peri* is the more suitable for the following reasons:

First, and most important of all, because of its greater accuracy. As stated by a lifelong student of Greek "*Para* can mean anything near or in the neighborhood of. *Peri* means that also, but has the additional meaning of something that surrounds: nor does it need to mean a connecting envelope or tissue. Its meaning can extend further than the first enveloping tissue." This is confirmed by another student of Greek who says: "There is no linguistic basis for saying that *peri* must connote immediate contiguity in a technical sense. That would be to import something into the Greek *peri*."

Second, because it is the unanimous choice of Greek scholars whose authority no one can question. It may, of course, be urged that they are unfamiliar with its application to anatomical terms but this is not borne out by their own statements or by a study of such terms already in general use. (Note the list submitted by Dr. Appleton.)

Third, because of the general use of the prefix *peri* in this country. It has become so deeply established in our literature that attempts to change it should not be undertaken without good and sufficient reasons. Your committee in its study of the subject has been unable to find such reason.

Respectfully submitted,

JAMES E. AIGUIER,
JOHN OPPIE McCALL,
ARTHUR H. MERRITT, *Chairman.*

NOTICE TO MEMBERS

The Editor is still receiving requests from medical and dental libraries for the January, 1930 issue of the Journal of Periodontology to complete their files of this publication. The co-operation of members in supplying this need will be greatly appreciated.

Address communications to 555 W. Maple Ave., Birmingham, Michigan

"Don't Fight the Ball"

AN IMPRESSIVE editorial appeared several years ago in one of our metropolitan dailies, emphasizing the futility of "fighting the ball" in the game of life and calling attention to the methods used by good baseball players who *smother* their catch, or who *give* with the impact so as to protect their hands and fingers, and to develop rhythm in the game.

We might apply this idea to many of the progressive movements in dentistry which are impeded by those who are "fighting the ball". For example, the various efforts to promote mouth hygiene are being handicapped by the statement that the slogan, "A clean tooth will not decay" (which certainly never did any harm, and infinite good), is without scientific foundation, and therefore wrong propaganda. Extensive research has never offered any one suggestion of more practical value in the way of prevention and control of disease in the mouth, either dental or periodontal than this simple formula, within the reach and understanding of both dentist and patient.

The preservation of the teeth is dependent upon the health of the supporting tissues as much as protecting the substance of the teeth themselves. Even though diseases of these tissues are responsible for the loss of more than one-half of the teeth in later adult life, and information in ample amount is readily available as to methods of prevention and control, yet patients continue to lose their teeth from these causes because of those who are "fighting the ball" and who say "Pyorrhea cannot be cured." Diseases that destroy the periodontal tissues *can* be prevented, and *can* be cured in their early stages in at least 90% of the cases. It requires especially trained skill and experience to treat and to control them in their advanced stages and it *is* true that eventually they may reach an incurable stage if uncontrolled. Is the statement "Tuberculosis is an incurable disease" any longer tenable? It is not, even though it may reach an incurable stage. The reason that periodontal diseases reach an incurable stage in the mouths of most dental patients is because those who are "fighting the ball" of progressive dental health service are not preventing them, or controlling them when they are readily amenable to cure.

The Council of Dental Therapeutics of the American Dental Association stands for honesty in advertising and harmless ingredients in dental remedies. It is on the side of the consumer who uses and pays for them. This progressive movement has had much opposition from those who are "fighting the ball" and who nonchalantly say to patients, "Any dentifrice will do; they are all about the same," when as a matter of fact some are positively injurious, and gross untruths are used to sell to and to mislead the consumer. It is an injustice to patients not to advise them intelligently along this line. "Accepted Dental Remedies" and the Reports of the Council published in the J. A. D. A. furnish all the necessary information.

Dentistry in striving to move onward has decided to own and to control its literature. It demands truth and honesty in advertising and complete editorial independence. It desires a current dental literature consistent with the ideals and dignity of a health service profession. The limited number, inadequacy of financial backing of our state journals, the advertising inserts in the main body and text of these and district bulletins, are serious handicaps to this broad forward movement in dentistry, placed there by those who are "fighting the ball."

Progress in our profession is dependent upon our learning to "give" with the ball, and in this way apply one of the most important lessons of life.

The Electric Pulp Tester As an Aid in Determining the Prognosis and Treatment of Teeth in Periodontal Disease*

By THEODORE KALETSKY, D. D. S., Jamaica, N. Y.

During the investigations of the reliability of pulp testers carried on at the New York Institute of Clinical Oral Pathology, an opportunity presented itself to record rather interesting observations of the dental pulp in its relation to various forms of pathoses commonly found in the oral cavity. Our findings in periodontal disease were such that one might feel optimistic as to the end results in the conservative management of these lesions. Furthermore, the electric pulp tester might be used as a material aid in such a procedure.

In studying the pulps in periodontal disease we classified the cases according to the degree of severity. For example, in Class I cases the periodontoclasia extended to about the middle third of the root. In Class II cases it extended to the apical third, and in Class III the destruction of bone definitely involved the apical region. We have taken from our records for study in excess of 100 cases, and it is extremely interesting to note that in the Class I and Class II cases we invariably found normal pulps which fact was really not beyond our expectation. However, in the Class III cases even though clinically and radiographically the evidence was such that one would ordinarily expect pathosis of the pulp, the pulp test findings were normal and this fact was corroborated by histologic examination.

The significance of such findings is obvious and one might feel that this should exert considerable influence toward more conservative methods in the treatment of these cases.

We know that the dental pulp possesses the same reparative mechanism as most of the tissues of the body. The fact that it may undergo certain changes for one reason or another should not necessarily lead one to believe that such a tooth is beyond repair. I have heard it mentioned rather frequently that when a periodontal lesion came near the apex of a tooth that such a tooth should be removed because the prognosis was unfavorable more so from the standpoint of damage that might be done to the pulp than from the fact that the tooth otherwise might not respond to periodontal treatment. Perhaps this is true, but until more experimental data corroborating this fact is furnished it might be well to be as conservative as possible.

We have had a somewhat similar experience in the handling of oral surgical prob-

Figure 1—X-ray of Class I, showing periodontoclasia extending to the middle third of root. The pulp test findings were normal.

Figure 2—X-ray of Class II, showing involvement extending to the apical third. Normal pulp test findings were corroborated by histologic examination of pulps.

Figure 3—X-ray of Class III, showing periodontoclasia involving the apical regions. The pulp test findings were normal.

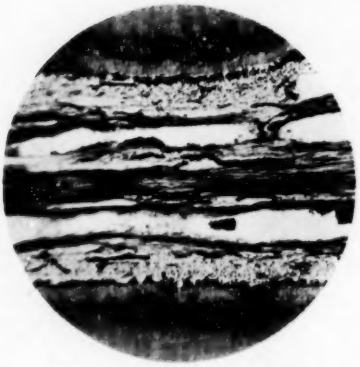


Figure 4—Photomicrograph of pulp of lower incisor shown in Figure No. 3. The regressive changes such as fibro hyalinization and reticular atrophy are characteristic in individuals of the age of this patient. This photomicrograph demonstrates an average field found in the lower four incisor teeth.

lems. Many teeth and pulps which only a few years ago were considered hopeless are today retained intact and are functioning in a perfectly normal manner. This was made possible through the intelligent use of the electric pulp tester which permitted us to be more conservative in determining the prognosis and treatment of many teeth. For example, in those teeth that appeared to be involved radiographically and clinically in cysts and also teeth involved in cases of osteomyelitis and other conditions rather commonly found in oral surgical problems, we have found that with the use of the pulp tester a great percentage of radical surgery, mutilating operations, extracting of teeth, and the extirpating of the pulps can easily be avoided.

Judging from this experience and by applying the same logic as was used in those cases to the treatment of periodontal lesions, it may be possible that a more rational and conservative management may be hoped for in this field. In periodontal conditions when changes are present in the investing structures of the teeth pulpal involvement may or may not occur. When pulpal impairment occurs due to conditions present in the mouth such as traumatic occlusion, or trauma from ill fitting restorations or else because of the close proximity of the teeth in question to a field where a pathological condition of some sort was co-existing, with the removal of the exciting factors, these pulps should return to normal and continue to function as such for an indeterminate period, provided, however, that necrotic changes have not taken place. Even though a slight injury to the pulp structures may be produced as a result of surgery or curettage, the expectancy for such a pulp to return to normal is fairly good. It is almost amazing how with the pulp tester one can trace either the return to normal or the progression of the condition of the pulp to a necrosis. This can actually be followed in its various stages with almost absolute certainty. In those cases that would be border line where the retaining of the vitality of the teeth may be the deciding factor the pulp tester would accurately determine the condition of the pulps in question and might materially aid in forming an opinion as to the best method of procedure.

In periodontal disease when the pulp test is normal as much conservatism as possible should be attempted in the various therapeutic measures. If some regeneration of the investing structures and a regression of the symptoms can be obtained by such management, it is reasonable to expect that the pulps of the teeth in question will probably not become affected or if they have been partially so that they will probably return to normal. Such teeth with proper care will generally function satisfactorily for a considerable time.

With regard to the consideration of teeth having periodontal disease as being possible foci of infection may I offer the opinion that, if all of the clinical evidence of the disease can be removed by various therapeutic measures and the pulp test of the teeth in question is normal, that these teeth while in that condition can always be regarded as healthy. To verify this statement studies of the pulps were made in an attempt to determine the presence of bacterial invasion especially in Class III cases. No satisfactory evidence confirming this was disclosed. In this particular group there was apparently less of bacterial involvement than in some of the other teeth considered normal and which had no apparent reason for the presence of bacterial foci.

If it is at all possible to be more conservative in the treatment of periodontal disease a definite knowledge of the condition of the dental pulp is readily available and in a most reliable manner by the use of the electric pulp tester.

The Use of Drugs, Instruments and Packs in the Treatment of Paradentosis*

By V. JOHN OULLIBER, D. D. S.
San Francisco, California

It is the purpose of this paper to outline the treatment of paradentosis with the use of drugs, instruments and packs as advocated by Philip Haley, PhC., D. D. S., of San Francisco.

HISTORY OF TREATMENT

Dr. Haley about 1920 had his interest aroused when he found that he obtained excellent results in reducing swollen gingival tissue by drawing broaches, wrapped with cotton, "saturated with escharotic drugs, such as phenol, or formo-cresol," between the teeth. This produced a reduction, not only of swollen tissue, but of suppuration, and other symptoms. Dr. Haley considered it desirable that some other means should be devised for holding medicinal agents in pockets in contact with the tissue for longer periods, and, in 1926, conceived the idea of using cotton twills. An article outlining this was published in the *Pacific Coast Dental Gazette*. These twills were prepared by taking cotton, making a bulb in the center, and twisting the ends to a fine point. In packing pockets these ends were left exposed, so that the patient might remove the pack if it became too uncomfortable. This article also described the Haley instruments, which included, hoes, spoons, chisels, slough remover and packers, which all possessed rounded or blunted points to prevent laceration. Among the drugs used by Dr. Haley were, copper sulphate, phenol, formo-cresol and chlorine for sub-gingival usage. A 7% hydrochloric acid was used for surface cleansing.

PRESENT STATUS OF TREATMENT

(1) Phenol for destruction of organisms and tissues.
(2) A medicinal pack and tr. iodine and aconite for management of sensitiveness.
(3) Phloroglucin in nitric acid for root cleansing.
(4) A medicinal pack for pocket maintenance after use of phenol.
(5) Potassium iodide and cuprous sulphate, producing cuprous iodide, and free iodine, or solution zinc sulphate and barium hydroxide, producing insoluble barium sulphate and zinc oxide, for cleansing root surfaces.
(6) Metalic oxides of zinc, tin, and magnesium for polishing coronal portion of tooth.

THEORY OF THIS METHOD OF HANDLING POCKETS

(1) Dilating the pocket.
(2) Destroying the microörganisms in the pocket.
(3) Cleansing the pocket.
(4) Maintaining the cleanliness of the pocket.
(5) Management of sensitivity of tooth and oral investing tissues.
(6) Regeneration and reattachment.
(7) Occlusion.
(8) Agencies.

Dilating the pocket is desirable to permit visual inspection of the interior. The presence of calculary masses attached to the root surfaces, highly infected masses of seropurulent fluid, food and tough fibrosis, make handling of pockets an unavoidable danger to the patient. Tactile sense in the average operator's hand is not as positive or reliable as direct vision.

The ease with which hemorrhage is induced from within a pocket shows that the blood vessels often exist in denuded condition. Pocket dilation also promotes drainage. It aids in the squeezing out of congested areas of static and nearly static fluids, permitting the free return to half starved cells of the life giving biological fluids.

CAUTIOUS APPLICATION OF PHENOL ACCOMPLISHES THE FOLLOWING RESULTS

(1) It destroys the bacterial colony.
(2) It dilates the pocket.
(3) As a sedative it protects the pulp.
(4) As a coagulant, it coagulates the pocket fluids, including the bacteria!

* Read before the Twenty-third annual meeting of the American Academy of Periodontology. July, 1936.

masses, making easy their removal by syringing.

(5) Stimulates the growth of granulating tissue from the pocket bottom, toward the gingival margin.

(6) It removes the fibrosis from cementum and alveolar surfaces.

(7) It destroys the infected tissues deeply enough to permit healing.

(8) It permits of examination of regenerating tissues.

(9) It allows the packing of sedatives.

METHOD OF USING DRUGS, PACKS, AND INSTRUMENTS

When a case first presents, the deeper pockets should be syringed and an examination made for tight, shallow thin walled pockets, so often present and frequently overlooked. These may be traced out by using the point of an explorer as a probe. All pockets are then packed with phenol liquefactum U. S. P., either using a twill, or a section of darning cotton, depending upon the size of the pocket. The phenol excess, which might otherwise run from the pocket into the patient's throat or on to the gum, is taken up at once, pressing the cross cut end of a cotton roll against the mouth of the packed pocket, and, after waiting a moment—if the operator thinks it necessary —paint the lip of the pocket with alcohol.

Beginners should pack one pocket at a time until confidence has been gained; and increased according to the operator's ability and judgment. The pack should remain undisturbed for at least twenty-four hours—if this can be borne comfortably—by the patient. Then the patient is instructed to remove the pack and return within two or three days, when it is again repacked for another 24 hours. This treatment is continued until the breaking down of the pocket walls is completed. If the tooth or tissue should develop sensitiveness, the phenol pack is omitted; and either the medicinal pack, or tr. aconite and iodine is applied. When tenderness is allayed, phenol may be resumed.

CLEANSING THE POCKET

This is important and includes a good curettage as far as possible, using hoes and chisels. An application of phloroglucin in nitric acid is made for about *1.5 seconds;* this is neutralized with sodium bicarbonate and repeated if necessary. This produces a clean surface which instrumentation alone is not capable of doing.

This solution may be prepared by adding one gram phloroglucin, to 10 cc nitric acid C. P., allow to react and add enough 10% nitric acid to make 100 cc. This makes a stock solution and may be diluted before use according to the needs of the operator. An equal volume of water should be added before application is made to the cementum.

MAINTAINING POCKET CLEANLINESS

This is accomplished by the use of a medicinal pack, a composition of bismuth tribromophenate, balsam peru, sodium perborate, Canada turpentine, and a fibrous base. This pack may be allowed to remain for days and will slowly liberate the sodium perborate and bismuth which it contains. Being tough and elastic it will maintain the dilation of the pocket, and, being possessed of sedative qualities, it will have a soothing effect on the cementum and investing tissues, thus aiding healing. It is gum colored, sweetened and flavored. It is not designed to replace rigid packs used in surgical cases.

MANAGEMENT OF SENSITIVITY

This is accomplished by either using the medicinal pack, or by applying tr. aconite 90 parts, tr. iodine 10 parts.

PRECIPITATION OF INSOLUBLE SALTS

If one examines the surfaces of teeth which have been long exposed to irritation from accumulations about the crevices, as is often the case in paradentosis, even in well kept mouths, one will nearly always find more or less etching at the cemento-enamel junction. This may be superficial or deeply carious and it may be so at some distance toward the root apex. Here small, light, carious areas may be very difficult to discover. If one should take such teeth after extraction and apply stains to root surface and, after drying, examine with a magnification of about thirty diameters, he will be surprised at their unevenness, pitted areas, calculi, and grooves between partially bifurcated roots. The chemical treatment of these conditions is accomplished by taking a saturated solution of barium hydroxide, applying it to the cementum, and allowing it to react with zinc sulphate in a saturated solution. This produces an insoluble white barium sulphate and zinc oxide, which takes place through the power of the inorganic salts to penetrate by diffusion into dead

cementum or dentin. This does not discolor the tissues. It is used in the many Class V cavities which are frequently discovered by the periodontist, as the reduction of the swollen gums and pockets proceeds. A similar method, very efficient for treating such tissues, but one which is open to the objection of discoloration, is the use of copper sulphate in solution, allowed to react with a saturated solution of potassium iodide. This liberates a free iodine in the tissues and a germicidal cuprous iodide.

REGENERATION AND REATTACHMENT

Regeneration and reattachment normally take care of themselves. The degree to which reattachment of pocket walls occurs seems to be a matter of opinion among periodontists.

Regeneration from within the pocket is the end toward which this treatment is directed.

OCCLUSION

Needless to say the best that can be done in the restoration of occlusion should be undertaken. When this is done by grinding occlusal surfaces to prevent cuspal interlocking and side stroke, or by restorative mechanical construction, it should be left to the judgment of the operator.

CONCLUSION

A summary of the advantages of treatment of paradentosis by phenol, chemical root therapy and blunt cornered instruments include:

(1) Immediate sealing of ruptured vessels.

(2) Immediate coagulation by phenol of all cell contents, including bacteria, toxic fluids, infected connective tissue, and epithelium.

(3) Phenol in contact with tissue is quickly surrounded with a gelatinous precipitate of colloid derived from cells, saliva and serum. This limits its caustic effect to superficial tissues protecting the deeper ones from injury. Probably a deep germicidal effect follows this by diffusion of phenol from the colloidal mass.

(4) Phenol exerts a sedative effect on the pulp, dentin, and cementum, assisting root treatment.

(5) Nearly any pocket wall can be removed with less than a dozen pure phenol applications.

(6) This selective removal affords time for conservation of pocket wall, allowing greater regenerations than follows immediate removal of wall.

(7) Chemical treatment of roots permit more positive cleansing than is possible by instruments alone. Chemicals penetrate any depressions too small to be seen.

(8) It provides a permanent deposition in these inaccessible places of insoluble salts of non-irritating characters, i.e., zinc oxide and barium sulphate.

(9) Pocket dilation allows of visual inspection before removal of calculus, and hence, a minimum of injury. It also encourages drainage and promotes granulation.

(10) Blunt cornered instruments lessen tissue laceration, and curved cutting edges allow maximum adaptation to convex and concave surfaces.

Twenty-Fourth Annual Meeting

AMERICAN ACADEMY OF PERIODONTOLOGY

ATLANTIC CITY, N. J.

JULY 8, 9, 10, 1937

Thursday

Presentation of Reports of Officers and Committees.

President's Address, Edward B. Spalding.

Infectious Mononucleosis. James E. Cottrell, M. D., University of Pennsylvania, Philadelphia, Pa.

Cooperation of General Practitioner, Patient and Periodontist. Justin D. Towner, Memphis, Tenn.

Gingival and Periodontal Disease in Children's Mouths. John Oppie McCall, New York, N. Y.

Undergraduate Instruction in Periodontology (Symposium). Samuel R. Parks, A. W. Bryan and Harry Lyons.

Friday

Committee on Scientific Investigation. Isador Hirschfeld, Chairman, New York City.

The Electric Pulp Tester as an Aid in Determining the Prognosis and Treatment of Teeth in Periodontal Disease. Theodore Kaletsky, New York City.

The Effect of Medicaments upon the Motility of the Oral Flora with Special Reference to the Treatment of Vincent's Infections. S. Leonard Rosenthal, Philadelphia, Pa.

Some of the Factors Controlling the Kinds and Numbers of Mouth Bacteria. J. L. T. Appleton, Philadelphia, Pa.

Salivary Analysis of Patients subject to Wastings, Abrasions or Erosions. Frances Krasnow, Guggenheim Dental Clinic, New York City.

Report of a Study on the Etiology of Bleeding Gums. Rudolph H. Pelzer, New York University, College of Dentistry, New York City.

An Experimental Study of Sodium Sulphide in Periodontal Pockets. Frank Beube, New York City.

ROUND TABLE DISCUSSION
LUNCHEON

Haidee Weeks and Clyde C. Sherwood, Chairmen.

Possible Fields for Research Within the Academy Membership. Dickson G. Bell, Leader.

How Many Clinical Cases of Advanced Periodontoclasia Should a Student Treat in College to Fit Him to Meet the Demands of the Average Dental Practice? W. C. Graham, Leader.

Does the Use of Drugs in the treatment of Periodontal Disease Hasten Recovery? C. J. Carabello, Leader.

Enumerate Measures Generally Recognized as Efficient in Preventing Periodontal Disease. John Oppie McCall, Leader.

Does Dentistry, as Practised, Produce Periodontoclasia? Robert L. Dement, Leader.

In Your Experience, has Consideration of the Patient's Diet Been an Aid in Treatment? Willa Yeretsky, Leader.

In Your Opinion, is Periodontoclasia on the Increase in the Mouths of Dental Patients? Where should the Responsibility for its Reduction be Placed? Malvern D. Huff, Leader.

How to Increase the Value of Radiographs in Periodontia.

Should Diagnosis be Made on Radiographic Evidence Alone? Lynn A. Fonner, Leader.

How Can Periodontal Treatment be Brought Within the Means of the Average Dental Patient? M. M. Bettman, Leader.

Do Bridges and Partial Dentures Generally Hasten the Loss of the Remaining Teeth? If so, Why? Carlos H. Schott, Leader.

Suggestions for Prevention and Control of Gingival Recession and Treatment of Cervical Caries and Sensitiveness. Austin F. James, Leader.

Suggestions to the General Practitioner Interested in Periodontia. Clayton H. Gracey, Leader.

To What Extent is the Patient Responsible for Success in Treatment? In What Way? Arvah S. Hopkins, Leader.

Should Dental Hygienists be Allowed or Encouraged to Treat any Form of Periodontal Disease? Grace Rogers Spalding, Leader.

How Can the Academy Extend its Usefulness and Interest to its Members? To the Dental Profession? R. Holmes Mason, Leader.

Has Electro-Coagulation a Place in Periodontia? Walter H. Scherer, Leader.

In What Way Can the Journal of Periodontology be Made More Useful? Mildred W. Dickerson, Leader.

What is the Present Status of Vincent's Infection, as to Increase and Treatment, etc. James A. Sinclair, Leader.

Sub-Gingival Curettage vs. Surgical Treatment in Periodontia. Olin Kirkland, Leader.

Ladies' Table. "Friendship." Mrs. Raymond E. Johnson, Leader.

CLINICS

Joseph R. Walsh, Chairman

The Push versus the Pull Technique in Subgingival Curettage. Clayton H. Gracey, Detroit, Mich.

Permanent Post Operative Stabilization for Teeth Affected by Periodontoclasia. Charles Goodman, New York City.

The Translite Process for Observing Tissue Changes Following Periodontal Treatment. Sidney Sorrin, New York City.

Photographs and Radiographs Showing Periodontal Disease in Children. John Oppie McCall, New York City.

Pulp Testing as a Diagnostic Aid. Daniel E. Ziskin, New York City.

Periodontia of Interest to the General Practitioner. Edward L. Ball, Cincinnati, Ohio.

The Control of Pyorrhea by Electro Coagulation. Walter H. Scherer, Houston, Texas.

Importance of Proper Home Care and its Technique. Robert L. Dement, Atlanta, Georgia.

Microscopic Studies of Various Blood Cells in Diagnosis. James A. Sinclair, Asheville, N. C.

ANNUAL BANQUET

Address by William J. Gies, Columbia University, New York. Subject: Ideals and Professional Development.

Saturday

Incidents of Office Practice. Arthur H. Merritt, Chairman.

Apparent Selection of Similar Ulcerative Areas Other Than the Gingival Crevice by Spirochetes and Fusiform Bacilli in Five Related Cases of Infection. Benjamin Tishler, Boston, Mass.

A Case of Periodontoclasia Definitely Improved by Endocrine Therapy. Willa Yeretsky, Grand Rapids, Mich.

A Case of Sodium Perborate Poisoning. Martha E. Jones, Detroit, Mich.

Localized Hypertrophic Gingivitis due to tongue habit. James E. Aiguier, Philadelphia, Pa.

The Effect of Systemic Hormonal Treatment on the Gums and Oral Mucosa of Women. Daniel E. Ziskin, New York City.

SYMPOSIUM

Subgingival Curettage in Treatment of Periodontoclasia. R. W. Rule.

Surgical Treatment of Periodontoclasia. Edward L. Ball, Cincinnati, Ohio.

Problems in the Study of Salivary Calculus. Theodor Rosebury, New York City.

* * *

"Forgive Us Our Debts"

IT RARELY happens that we are granted the privilege of repaying directly, or fully, our indebtedness to those men who have devoted their lives to a vision, an ideal, or a cause, even though our lives may have been made over as a result of the accomplishments of such leaders. The best that we can do toward reducing our indebtedness is to watch for ways of paying off on the installment plan by using our personal efforts and influence to carry on the work which these pioneers established.

A little thought will bring to mind a dozen or more men who within our own time have paid with their health and some with their lives so that it could be said that "the soul of dentistry is marching on." Great causes are always challenged, and their champions seem to need to fight to defend them, the greater the cause, the greater the struggle which is never ending until the cause is won.

Our leaders have not been dependent upon words of praise, yet a word of encouragement might ease for us the burden of our indebtedness to them. To those who carry the weight of responsibility of the American Dental Association and its official publication, we are especially indebted, but how rarely do we offer them encouragement or appreciation. Fortunately they do not need it, but *we* need to make the effort for our own peace of mind, in case we should stop to think. These are debts for which no reminders are ever sent.

One outstanding debt which we all owe, *with interest,* is to the Founder of the Journal of Dental Research whose life for many years has been devoted to the cause of dentistry. The very least that we can do is to carry on this publication by subscriptions to this invaluable, outstanding periodical. No dentist who wishes to be well informed can afford to be without it. Regular, sustaining, or life subscriptions are available. The value to us is not alone in its contents but it is a Journal with a soul put there through endless sacrifice, labor, and devotion to an ideal; on this account it will always be a great inspiration.

ABSTRACTS AND EXTRACTS OF CURRENT DENTAL LITERATURE FOR 1936

Periodontal Histo-pathology, Periodontal Bacteriology, Other Laboratory Researches, Clinical Etiology, Symptomatology and Diagnosis, Treatment, Home Care and Prophylaxis, Vincent's Infection, and Miscellaneous Subjects

(a) Periodontal Histo-pathology

(Continued from 7 (2): 84. July, 1936)

179—Cahn, L. R., D. D. S.: **The histopathology of some common mucous membrane lesions.** D. Cosmos 78: 51-57. 1936.

The histopathology of lesions of the mucous membrane of the mouth is not generally well enough understood. With the aid of photomicrographs Dr. Cahn describes the histology of the normal oral mucous membrane and defines some of the more common pathological terms used in connection with skin lesions.

The following lesions are briefly described:

a) Granular degeneration of the gum:—The etiology is unknown, but it is associated with marked periodontal resorption. There are no subjective symptoms.

b) Fordyces disease:—Small discreet yellow spots on the oral mucous membrane. These are aberrant sebaceous glands and they are benign.

c) Aphthae:—Painful circumscribed ulcers.

d) Leukokeratosis.

e) Lichenplanus.

—*S. H. S.*

180—Kronfeld, R., B. S., M. D., D. D. S.: **Structure, function and pathology of the human periodontal membrane.** N. Y. Jour. Dent. 6: 112-122. 1936.

Dr. Kronfeld presents a comprehensive study of the human periodontal membrane in health and disease, based on a series of jaw sections from seventy-five different persons of varying ages and sex.

Embryologically the membrane is derived from the tooth follicle. It consists of strong bundles of wavy collagenous fibres arranged in groups, with spaces between them filled with loose connective tissue. The fibres are not elastic; movement takes place by the alternating compression and taking up of slack in the fibre bundles. The fibre bundles are divided into five groups as first classified and named by G. V. Black.

The periodontal membrane responds to functional changes. Under normal conditions the membrane averages between 0.20 and 0.25 m. m. in thickness. Increased functional stress causes a thickening of the membrane. It may measure in this condition between 0.28 and 0.35 m. m. This is a true hypertrophy. Lack of function on the other hand causes it to become thinner and the average measurements are somewhere between 0.10 and 0.15 m. m. In this case there is atrophy of the fibres with replacement by loose, irregular connective tissue.

The alveolar bone, likewise, responds to different functional stimuli. Under normal physiologic stress the normal architecture of the bone is maintained. With an increase in stress up to certain limits there occurs a corresponding strengthening of the bone. Conversely decreased stress over a period of time causes atrophy of the supporting cancellous bone.

Subjection of the teeth to excessive force may cause the periodontal tissues to be temporarily or permanently damaged.

The various phenomena of orthodontic movement with the resulting bone resorbtion and bone rebuilding are explained in the light of the findings of Maximow, who demonstrated the universal presence of undifferentiated mesenchymal cells in connective tissues throughout the body. These

cells normally dormant, may assume various functions as required by conditions and circumstances.

If the injury is not too great the peridental membrane undergoes repair in the same way in which mesenchyme is repaired. Necrotic cells and extravasated blood are removed by phagocytosis; larger areas of necrotic tissue are removed by giant cells. New connective tissue is formed from the old fibroblasts in the vicinity. Very often resorbed cementum and bone is replaced by new cementum and bone.

The pathology and symptomatology of inflammations of the peridental membrane are dealt with summarily, as are also the changes in the membrane influenced by systemic diseases. In the latter instance, only clinical evidence and animal experimentation are available.

The conditions are well illustrated with photomicrographs.

—S. *H.* S.

181—Mayer, E.: **Das Verhalten von Zement, Alveole und Alveolarknochen bei gestoerter mechanisch-funktioneller Beanspruchung.** The effect of a disturbed mechanical functional articulation upon the cementum, tooth socket, and alveolar bone. Dtsch. Zahn, Mund und Kieferhlk. 12: 838. 1936.

According to the cases examined it can be concluded that different and changing occlusal stress leads to histological changes of the holding apparatus of the tooth.

(1) In case of overstress acting in one direction hypercementosis is found at the point of pressure.

(2) The peridental membrane seems to be widened in case of hypercementosis because of communication with the medullary spaces.

(3) The alveolar compact bone is absorbed by pressure and the space so caused is filled by hypercementosis.

182—Meyer, R.: **Histologische Untersuchungen ueber den Epithelansatz.** Histological examination about the borderline of the epithelium at the neck of the tooth. Ztschr. f. Stomat. 12: 714. 1936.

The eruption of a tooth is continuous. The passing of the enamel-cementum line through the oral epithelium occurs without interruption and an important state of this eruption is the moment when the first epithelial cells touch the cementum. It never occurs at the same time over the whole dental circumference. Before the epithelium is separated from the tooth surface it forms the cuticula dentis and while there is no difference between that of the enamel and that of the cementum, it seems that the junction between enamel and cuticula is better than that between cement and cuticula. This may explain the lowered resistance against external influences as deposits and caries.

183—Parade, G. W.: **Kapillaren und Kapillaruntersuchungen.** D. Z. W. p. 611. 1936.

It is possible to detect a certain relationship between different diseases and changes of the capillary system by means of the microscopical capillary examination, especially if there are disturbances of the circulatory apparatus. The findings are strange forms, serpentines and enlargements of the end-capillaries, occurrence of atonies and spasm, changes of the blood current speed, and pericapillary blood exudation. The capillary changes in paradentoses were investigated and found to be the same as those in a vaso-neurotic diathesis.

184—Platenow, E.: **Ueber den Zustand der Zahnfleischnerven bei Alveolarpyorrhea.** The condition of the gingival nerves with paradentoses. Ztschr. f. Stomat. 21: 1335. 1936.

Platenow reported some years ago about the difference of sensitivity of slightly loose teeth and the more loose teeth of paradentoses. The less loose the tooth is, the more sensitive it becomes. Histological examination of the pulp verified his observation. It showed a degeneration of the nerve tissues. He reports in this paper also about the findings in his researches of the gingivae of paradentoses patients. Proliferative inflammation, the appearance of collagenous fibers, proliferation of the epithelium and deposition of calcium was found in the tissue. He believes that the precipitation of calcium may be due to acidosis. The endothelial cells of the capillaries were swollen. The nerve fibers were not disturbed in their continuity but showed more or less degeneration of the axis cylinder depending upon the severity of the inflammation.

185—Wikblad, Ake: Ueber Kapillarmikroskopie bei marginaler Paradentitis. Capillar-microscopy as diagnostic aid in cases of marginal paradentitis. Z. Rundsch. 18: 791. 1935.

Wikblad considers the capillar-microscopy as a very important aid in early diagnosis of marginal paradentitis. It is possible to detect a disposition to marginal paradentitis in childhood. Of equal importance is the test of the strength of the capillary wall, the so-called petechien-test which is used for the diagnosis of a latent scurvy. They both detect a faulty and defective endothelial structure.

The author advises the examination of all school children by means of these two tests. It would prevent in most cases the consequences of a latent scurvy and a marginal paradentitis by prophylactic treatment. The capillar-microscopical examination is mostly done on the lower lip or on the cuticle of the fourth finger of the left hand. It is advisable to search for any allergic diseases and to ask the patient if he has had any serious infections or systemic diseases.

(b) Periodontal Bacteriology

(Continued from 7 (2): 85, July, 1936)

61—Axhausen (Berlin Correspondent): Maxillary actinomycosis. J. A. M. A. 107 (10):804. Sept. 5, 1936.

Prof. Axhausen stated before the Berlin Medical Society that maxillary actinomycosis is not rare but a majority of the cases are not diagnosed. Early diagnosis is indispensable to rational therapy. Primary pure actinomycosis is found only on the palate and tongue, while in the jaw the disease is always primarily due to pyogenic infection from some cause, the cocci preparing the way for the actinomycotic granules which in turn are aided by the bacteria. All types of dental infection can be accompanied by actinomycotic infection, and examination of pus alone is not sufficient to establish its presence; scrapings should be made where possible. In chronic cases roentgen irradiation in mild doses should accompany surgical treatment, this procedure alleviating the extreme symptoms; and "fatal cases no longer occur."

—*Copy.*

62—Bulleid, A.: Smears from gingival margins. Dark field illumination. Brit. D. J. 60:85. 1936.

Zeiss binocular, eyepiece no. 7 and a special D. 9 aperture. Objective no. 60 N. A. 0.9. Dark ground water condenser was a Zeiss cardroid and the lamp a Zeiss spotlight, 2 amp. Smear taken from patient with a subacute chronic gingivitis by means of a sterilized platinum loop, transferred to a slide, emulsified with normal saline, covered with slip no. 1. A spot of distilled water placed on the condenser and the light and condenser focused and adjusted under low power until satisfactory dark ground illumination was obtained. Oil drop placed on cover slip and high power focused.

Cocci, fusiform bacilli, leptothrix, and many spirochetes which exhibited considerable motility were observed.

Further work is to be published shortly by the author.

63—Fish, E. W., and MacLean, I.: Distribution of oral streptococci in the tissues, in: Brit. D. J. 61:336-362. Oct. 1936.

This is an investigation showing the incongruity between bacteriological findings in treating chronic oral infections and the histological picture of the tissues concerned.

The streptococcus has a real struggle to establish a modus and locus vivendi in the tissues described.

Histological pictures of chronically inflamed and healthy tissues failed to show streptococci.

A series of experiments is recorded in which teeth with live pulps were extracted from pyorrheic patients and could be delivered sterile by simply cauterizing the pocket. Controls always showed infection.

Photomicrographs of teeth extracted without cauterization showed streptococci and diplococci which were pumped into these tissues during extraction manipulations.

Bacteriemia following multiple extractions in pyorrhetic patients can be prevented by simple cauterization.

Bone and supporting tissues about living teeth are never infected and such teeth need never be extracted to eradicate infection since the organisms are confined to the periodontal sulcus.

Diffusible toxic products aggravate the surrounding bone and soft tissues.

Streptococci must have a necrotic nidus otherwise they provoke an acute reaction.

Very important bearings on surgical procedure or surgical treatment of oral infections are discussed.

64—Fisher, C. and Arnold, L.: **Classification of yeasts and yeastlike fungi,**: Abstracted in Annals of Dentistry, 3:210. Dec. 1936.

This monograph is most welcome, not only for its general considerations of yeasts, but especially for the few pages devoted to fungi of the mouth. This phase of the work may be summarized as follows:

Monilia albicans is generally accepted as an etiologic factor in thrush of the mouth. Many other types of monilia have been described from lesions of the mouth as well as organisms from other groups—S. *tumefaciens albicans, debaromyces klockeri,* true yeasts, *oidia, leptothrix,* and others. Yeastlike fungi are frequently associated with diphtheria and pseudomembranous anginas.

Ten percent of one thousand throats (normal) were found to contain yeast-like fungi. In children up to six years of age, 38.5 to 54% were found to contain the thrush fungus.

The etiologic factor in perléche was believed to be *M. albicans* by many writers. Nineteen per cent of the normal commisures of the mouth contained yeast-like fungi.

65—Gekker, Y.: **Results in the use of the antivirus of Bezredka for several years.** Odontologie, 74(7): 421. July, 1936.

In the treatment of teeth antiseptics are far from being harmless. They may alter pulpal and periapical tissues making them often a culture medium for bacteria. The use of this antivirus has led to complete satisfaction in the hands of the author. For infected teeth a wick saturated with the antivirus of B., and hermetically sealed is left in the tooth for 1-2 days. The canals, often refractory to treatment have suddenly shown amenability to cure.

Following operations and extractions a sterile tampon saturated with the antivirus of Bezredka is placed over the injured area, (2-3 hours). It is also used to advantage in pulpotomy and pulpectomy.

This method plus radiotherapy is used by the author in ulcerative stomatitis and pyorrhea.

66—Hiller, E.: **Membranous oropharyngitis.** Med. J. Australia, Nov. 9, 1935. Abst. (condensed) J. A. M. A. 106(7): 579. Feb. 15, 1936.

In describing membranous oropharyngitis Hiller says that characteristic opalescent, sharply demarcated membrane appears first on fauces and palate, but the favorite direction of extension is to the gums and gingivo-labial fold. The membrane is paler than the diphtheritic; there is no constitutional involvement, and diphtheria antitoxin is of no avail. Bacteriologic examination is necessary for positive differentiation of the condition from diphtheria and Vincent's infection, the organisms most consistently present here being a short-chain, non-hemolytic strep. Brilliant green, 2%, with crystal violet, 2%, and methyl alcohol, 48%, and water, 48%, as a swab is practically specific for the faucial lesions, though those of gums and gingivo-labial folds heal more slowly. Over-treatment may prolong the disease. It is mildly infective and articles should be sterilized.

—*Copy*

67—Kirkpatrick, R. M., B. D. S.: **Bacteriology of periodontitis.** D. J. Australia, 8: 607-615. 1936.

The author finds the presence of fusospirochetal organisms in almost every case of gingivitis and periodontitis examined; and stresses the fact that the presence of these organisms always indicates the existence of a pathological condition. The fusospirochetal group are not found in healthy mouths.

Debris and pus usually overshadow the presence of fuso-spirochetal organisms in pyorrhetic pockets but a deep smear reveals their presence. The more chronic a gingivitis becomes the more secondarily invading cocci appear in the pocket. Sections prepared by Tunnicliff show an external necrotic layer, a medium layer composed of fusiform bacilli, sometimes in palisade formation, and finally a deep layer of living tissue invaded by spirochetes.

The author accepts Smith's classification of the fuso-spirochetal organisms based on Noguchi's work. Four morphological types of spirochetes are described; *Trep. Vincenti, Trep. buccale, Trep. macrodentium, Trep. microdentium.* The fusiform bacilli are grouped into two morphological types.

It is interesting to note that fusiform bacilli are more resistant to tannic acid and glycerine medication (both of which are so effective in the treatment of Vincent's) and that the bacilli are hardier than the spirochetes which die after 24-36 hours on a dark ground slide while the bacilli and spirilli remain alive.

The fusiform bacilli are facultative anaerobes and the fuso-spirochetal symbiosis allows the aerobic surface bacteria to use up sufficient oxygen to make the deeper field where the bacilli and spirochetes abound, a fertile environment for them. Many workers believe that some of the spirochetes are merely different life cycles of the fusiform bacilli. *Trep. buccale* and type one fusiform bacillus are generally the ones considered to be identical.

Trichomonas buccalis plays no part in the etiology of gingivitis. It appears only after pocket formation has begun.

—*G. H.*

68—Petocka, F. and Obrtel, J.: **Mycotic infection of buccal mucosa caused by leptothrix.** Ceská dermat., 15:206, 1935; abstr. Arch. Derm. & Syph., 33:336, 1935. (J. A. D. A. April, 1936. Copy).

A healthy, 36-year old man, presenting evidence of good oral hygiene, showed a hard, shiny, white diphtheria-like membrane the size of a dime and with several satellite lesions under the tongue. No inflammatory reaction could be seen in the surrounding mucosa and a slight increase in salivation and a sensation of the presence of a foreign body were the only subjective symptoms. After the two years' treatment, a slight extension of the pseudo-membrane was noted. Two types of leptothrix, not conforming to any known species and therefore designated as types A and B, were isolated and grown in pure culture. No pathogenicity was evidenced on inoculation of animals. Antigens prepared from the cultures gave negative intracutaneous reaction, but type A produced an inflammatory reaction in controls.

HAMILTON ROBINSON.

69—Routchka, Zolkover, and R. Tretiak: **Therapeutic action of bacteriophage staphylococcique in diseases of the teeth and mouth.** Odontologie, 74(11): 674. Nov., 1936.

This specific bacteriophage was used in 129 cases, in many having speedy results. Of 52 cases of pyorrhea treated 41 have been completely cured, in 4-5 sittings. In 5 others there have been relapses soon followed by rapid cure and in 2 cases no effects whatsoever.

In ulcerative stomatitis 18 cases have been completely cured, 5 only temporary disappearance and in 1 case no results.

In 25 cases of hypertrophic gingivitis good results have been obtained in 22, in 2-3 sittings, these within 5-7 days.

The bacteriophage is both a therapeutic and prophylactic measure of great value to stomatology.

70—Schladebach, Irmgard: **Histo-bakteriologische Untersuchungen paradentischer Kieferstuecke.** Histo-bacteriological investigations of parts of paradentitic jaws. Paradentium, 1. p. 8. 1935.

The conclusion of the histo-bacteriological investigation is that there is almost no danger of a hematogenous infection from a paradentitic inflammation and infection. There is usually no direct migration of the germs from the pockets into the living tissues as long as the resistance of the body is normal. The pus filled pockets with the opportunity to discharge their content into the oral cavity may be compared with open abscesses on the skin or mucosa which very seldom cause a secondary infection. A harmful effect by the toxins is possible. The danger of swallowed infectious material is not believed by the author to be a serious one because there is always an abundant bacterial flora in the mouth.

71—Siegel, Ernst: **Die Zahnsteinbildung.** The formation of deposits. Z. Rundsch. 1935. 21. p. 930. Abstracted from Archif f. Hyg. & Bakter. 113: 4.

Siegel states that the formation of deposits is mainly caused by aerobic actinomyces, because they precipitate lime salts. The deeper parts of the calculus are masses without any structure. In the upper parts threadlike and other micro-organisms are found. The staining of the calculus is caused partly by the actinomyces. The foetor *ex oris* also caused by the actinomyces. When culturing the actinomyces from calculus deposits the cultures had a particular putrefactive odor.

72—Smith, D. T., M. D.: Role of spirochetal organisms in acute and chronic infections of the mouth. J. A. D. A. 23: 1340-44. July, 1936.

The author believes that the spirochetes of the normal mouth flora are responsible to a great extent for oral infections. These spirochetes may be transferred or transmitted to other parts of the body, *i.e.* lungs, skin, gastro-intestinal tract, appendix, and genitalia.

The proper bacteriological tests for distinguishing *T. microdentium, T. mucosum, T. macrodentium, T. Vincenti, T. buccale, leptospira, trimerodontia,* and three fusiform types, *Vibrio viridans,* and three forms of streptococci are given.

A mixture of *T. microdentium,* type 3 bacillus, *Vibrio viridans,* and an hemolytic streptococcus forms a symbiotic unit which experimentally brought on a foul necrotic lesion, transferable from guineapig to guineapig. Arsphenamine treatment eliminates the spirochete, devitalizing the virulence of the symbiosis.

Arsphenamine treatment of intravenous or intramuscular nature should be used only when other treatment fails. A specific dietary regime and local dental treatment must accompany any type of therapy. A vitaminosis and mineral deficiencies must always be considered as possible factors in cases of pyorrhea.

Normal guineapigs possess a mouth flora quite similar to that of man. Institution of a scorbutic diet lowers the resistance of the gingiva to such a degree that a picture pathognomonic of pyorrhea as we know it in man develops. The pus of the lesion contains the symbiotic combination mentioned above.

Lack of vitamin D or calcium brings about bone resorption and potential pocket formation. Food trauma to the gingiva in such cases precipitates a fuso-spirochetal infection.

73—Zinn, H.: Der bakteriologische Nachweis von Streptotricheen (aktinomyzeten) im Zahnstein. Bacteriological proof of actinomyces in the gingival calculus. Dtschr. Zahn, Mund, Kieferhlk. 5: 354. 1936.

The presence of actinomyces in the deposits is proven in 12 out of 50 cases. Zinn believes that the actinomyces are a permanent part of the calculus. In all cases the actinomyces was gram positive and a branched rod. Most of them could be cultured only aerob. The culture and the isolation was extraordinarily difficult. It can be assumed that the actinomyces participates in different pathological processes of the mouth and jaws though the pathological anatomical picture of the genuine actinomycosis is of exogenous origin. The actinomyces participates in forming the deposits. The color of it may be partly influenced by the different color forming types of the germ.

(c) Other Laboratory Researches

(Continued from 7 (2): 86, July, 1936)

67—Klose, H.: Eisen im Zahnstein. Iron in gingival calculus. Deutsche Zahn, Mund, und Kieferheilkunde. 1:56. 1936.

Klose checked the values of the analysis of dental deposits in regard to iron contents which were published by Vergue in 1869. He found 0.0032—0.1225% of iron in the calculus which is much less than that found by Vergue. In case of gingivitis the iron content was higher than in paradentosis and it was less in the light colored deposits than in the green one. He divides the deposits into the lighter supragingival calculus, the so-called salivary deposits, and into the darker margin of the supragingival deposits and into the subgingival deposits, the so-called serum deposits. The subgingival deposits contain more iron than the salivary deposits.

68—Loos: Beitrag zur Speicheluntersuchung. Addition to the study of saliva. Parad. 1: 12. 1936.

(1) The normal saliva contains 6-15 mmg % rhodan. Age, sex and the changing conditions of the oral cavity do not vary its content.

(2) The normal saliva contains 5-10 mmg % glucose. Hyperglycemia does not increase the sugar content of the saliva.

(3) There is no cholesterin in normal saliva. It is present in the saliva of diabetes patients but disappears after insulin treatment.

(4) The content of uric acid is between 2 and 4 mg %. It is the same in car-

ies or paradentoses. Glutathione is in the normal saliva from 15 to 40 mg %.

(5) Lactic acid is 10-12 mg %. The amount is the same at the time of secretion as some hours later. The bacillus lacticus does not increase the amount of lactic acid.

(6) Iodine is present to 0.1 mg %.

(7) The pH of the saliva changes often during the day. It is acid in allergic patients and during pregnancy. There is no relation between the pH and the viscosity of the saliva.

69—Rutishauser, E. and Held, A. J.: **Paradentose experimentale isolée chez le chien.** Schw. Mschr. f. Zahnheilk. 2: 81. 1935.

The belief that paradentosis is a disease which manifests itself in the bone of the jaws and is caused by certain metabolic diseases has been proven experimentally. Dogs were fed with small doses of lead which influenced the metabolism toward a relative acidosis. Thyroxin was administered. In 4 out of 5 cases paradentosis was experimentally created. In one case the changes in the bones of the whole skeleton were similar to those of an osteitis fibrosa. Changes may be found microscopically at the beginning: atrophy of the margin of the alveolar bone, no pocket formation, no inflammation. Later on: growth of the epithelium, hypertrophy of the cementum and pocket formation may be noted.

(d) Clinical Etiology

(Continued from 7(2): 96. July, 1936)

345—Bauer, W.: **Ueber die Ursachen der Paradentitus.** Schweiz. Mschr. f. Zahnheilk. 5: 390. 1935.

The basal metabolism of younger patients showed no difference in cases of a serious alveolaratrophy without visible inflammation or in cases where considerable pus discharge was present. There was no alveolaratrophy in two cases of a most serious disturbance of the protein action. The alveolaratrophy was also not regularly present in diabetic patients. Bauer does not deny the general inflammatory disposition of diabetics in the oral cavity. Many authors believed that they produced a typical paradentitis by a vitamin poor diet or similar experiments but it was probably a form of rickets of the whole bony system which is not the same as paradentitis in man.

346—Fuchs, Hans: **Die biologische Heilung der Paradentoses.** Z. Rundsch. 19: 822. 1936.

Paradentosis is closely related to dental caries. Both are an impression of a disease of the entire body and the result of a wrong diet. Paradentosis is an insufficiency disease where too much acid is present and not enough alkaline salts and vitamins. Fuchs uses besides the local treatment, vigantol (Vit. D), vitamin C, and a corrected diet. He considers mastication an important factor and advises therefore hard and rough food.

347—Hartmann: **Zur Paradentosefrage.** Fortschr, auf dem Gebiete der Roentgenstrahlen. 46. abst. Parad. 2: 37. 1936.

Hartmann as a roentgenologist considers the paradentoses as osteomyelitis. Often the infection and necrosis does not stop after the removal of the teeth but it extends rapidly into the bone. Osteomyelitis may never completely heal on account of the wide open medullary spaces in the bone. In case the infection is continuously irritated and reinfected, it will extend. The origin of paradentosis is as follows: the toothbrush injures the paradentium and the always present micro-organisms cause an infection of the lesions which extends into the bone of the alveolar septum. Calculus deposits are a secondary cause and only if the neck of the tooth is free, which means a recession and atrophy of the alveolar bone, deposits can be formed. The alveolar atrophy is therefore not a consequence of deposits.

348—Heinrich, E.: **Die Ursachen der Paradentose von Standpunkte der Naturheillehre aus gesehen.** Etiology of paradentosis seen from the standpoint of naturopathy. 48: 1144. 1935.

Heinrich believes that the problem of diet plays an important role in the etiology of paradentosis. He does not reject the other theories as those of occlusal stress or trophoneurosis or the inherited tendency to paradentosis, or others, but believes that the dietary side is not considered enough although a wrong or deficient diet may be the base of the appearance of other symptoms which may lead to the conception of an incorrect etiology. Paradentosis as a result of overstress can only result when or-

ganic disturbances have previously injured the paradentium.

The 24 hour urine of 10 paradentosis patients was examined and the difference from normal was marked, there being a very high content of rest-nitrogen which amounted to about 95 mg %. Ammonium instead of 0.2 gram was 0.6-0.7 gram and creatinin instead of 0.3 gram was 0.9-1.0 gram. Sodium bicarbonate retention was much higher than the normal which is always due to a diet rich in meat and strongly seasoned. The blood sugar and the phosphate cholesterin content were considerably higher. The alkaline-reserve was very much lowered. In all these cases a proper balanced diet plus the local therapy led to a cure.

349—Hruska, Arthur: **Beitreg zur Erkenntnis der Paradentose in ihrer geographischen Verbreitung bei den einzelnen Voelkern.** The knowledge of paradentosis in its geographical occurrence among different nations. D. Z. W. 50: 1183. 1935.

Hruska had the opportunity to examine people of nearly all races and nations and found the greatest variations in the occurrence of paradentosis. He believes in a dominant occurrence of paradentosis in certain races. He found people with a vitamin poor diet without paradentosis and other people who have plenty of vitamins in their diet with paradentosis. There are people who live in the same environment, are subject to the same surrounding conditions, yet some have, some have no paradentosis. There are many people who eat soft food mainly and have no paradentosis, and vice versa. People with malposition and occlusal anomalies have no paradentosis and people with the best articulating dentition have paradentosis. All these contradicting findings show that there must be an underlying factor which is not easily recognized and which seems to be rather a biological factor than a functional, physiological, or even pathological one.

350—Hutton, J. H., M. D.: **Relation of endocrine disorders to dental disease,** J. A. D. A. 23: 227-236. 1936.

The hormones exert a fundamental influence upon the eruption, placement, hypoplasia and resistance of teeth to caries, as well as upon the state of the gums and jaws. The dentist familiar with endocrine disorders and who recommends an endocrin investigation when dental examination warrants it is performing the highest function of a health officer.

The thyroid plays a basic role in the eruption and quality of the teeth. Hypothyroidism results in slow eruption of the teeth, irregular replacement, and softness with high susceptibility to caries. In adult hypothyroidism there is a tendency for spongy, bleeding gums liable to recession and pyorrhea. Suspicion of the condition may be confirmed by the clinical signs of dry skin. Though little is known of the dental effects of hyperthyroidism it is, nevertheless, essential in cases of toxic goitre to clear up oral sepsis.

The role of the parathyroids in calcification of teeth is an important one. Through an adequate amount of viosterol and Ca the mother's teeth may usually be preserved during pregnancy. Fleischmann believes that enamel hypoplasia in children with rickets and tetany is due wholly to disturbance of parathyroid function. Hyperparathyroidism has been shown by Schour to result in hypercacified enamel strips. Furthermore, hyperparathyroidism is associated with cysts and giant cell tumors occurring at a point of injury, especially following a dental extraction.

The pituitary also plays an important role in the size of the teeth and jaws as well as eruption of teeth. Hypopituitarism is usually accompanied by early eruption, small teeth, and spacing of the teeth. The individual of this type is immature. Medication and orthodontia go side by side in the treatment. In hyperpituitarism of adults the condition of acromegaly results. Hyperpituitarism in early life leads to gigantism and large teeth susceptible to decay.

Therefore, irregularity in eruption time and development of the teeth, with high susceptibility to caries, and in adult life, spongy, bleeding, recessive gums, should lead the dentist to suspect hypothyroidism. Wounds that do not heal after extraction should arouse the suspicion of diabetes. Appearance of swelling at site of extractions should raise the probability of hyperparathyroidism. Early caries and irregularity may indicate a pituitary deficiency. Decalcification of the teeth at an early age should lead to endocrine investigation with regards to calcium metabolism.

—*G. H.*

351—Kirkpatrick, R. M.: **The etiology of gingivitis.** D. J. Australia. 8: 141-147. 1936.

The etiology of gingivitis is divided into two factors, systemic and local. The author does not in this article delve further into the systemic factors other than to mention that blood dyscrasia, scurvy, and diabetes affect the gums deleteriously. The local factors are discussed under mechanical irritants and local abnormalities such as, disuse, trauma, and infection.

—*G. H.*

352—Klein, J. A., D. D. S.: **Consideration of certain factors contributing to pyorrhea alveolaris.** D. Outlook, 23: 457-459. 1936

Pyorrhea alveolaris is not a clinical entity but a composite syndrome found in other diseases involving the peridental tissues and is the end result of inflammation of the peridental membrane.

The condition begins with a depression beneath the gingival crevice caused by proliferation of the superficial layer of the epithelial cells in the affected area. Food debris and bacteria accumulate in the pocket. Carbohydrate fermentation occurs and lactic acid is formed. The lactic acid is the governing factor in the destruction of bone, peridental membrane, and cementum. Necrosis and pus formation follows.

Treatment should be both systemic and local and the aid of a physician is advisable. Local treatment is medicinal and instrumental in the order named. Infection should be removed as much as possible before instrumentation.

The author employs a solution of boric acid (one part), hydrogen dioxide (two parts), and aqua calcis (seven parts) to cleanse the pockets; and a proprietary vegetable compound which is a stimulant, astringent, and antiseptic injected into the pockets and sealed in with paraffin.

—*G. H.*

353—Koch, Franz: **Zur Karies and Paradentosefrage.** Med. Welt, 11: 1935. Abst. Z. Rundsch. 1935.

Racial, constitutional, and environmental influences are responsible for the occurrence of dental caries and paradentosis. The diet, the quality of oral hygiene, the inherited weakness of the masticatory apparatus, and the presence of pyogenic bacteria are some of the most important factors for both diseases. The oral cavity is an excellent breeding place for microörganisms. Frequent prophylactic treatments, mostly vegetarian diet with an ample amount of vitamins, and the strengthening of the whole organism by sports in the open air and sunshine, may diminish the frequency of dental diseases. Furthermore it is important that the children get dental care as early in life as possible.

354—Krauss, R.: **Pyorrhea alveolaris.** D. J. Australia, 8: 148-155. 1936.

Pyorrhea is not a disease entity but one part of a syndrome dependent on the fundamental upset of the body as a whole. To treat pyorrhea locally without reference to the general disturbance is to court failure. It is quite useless to rely on one method of treatment. A judicious study of the patient's history including urine tests often reveals the causative factor and suggests the right line of treatment.

Subgingival calculus is most frequently the causative factor of the periodontal pocket. Tartar deposition may be brought about by condition of alkalinity. Calcium carbonate and phosphate are contained in the body fluids in a supersaturated solution made possible by the carbon dioxide combining power of the blood. Any condition reducing the carbon dioxide combining power of the blood will bring about deposition of serumal calculus.

The author reports a faulty metabolism with a defective oxidation of fats in many cases as indicated by the presence of diacetic and B. hydroxybutyric acids in the urine. These acids react with blood carbonates, reducing CO_2 combining power. A diet rich in vitamins A and C is indicated in treatment of these cases.

Sometimes pyorrhea is found with an absence of subgingival calculus, little inflammation, but with marked bone resorption nevertheless. In such cases there is usually an endocrine vitamin disturbance or imbalance. A detailed history and examination of diet will reveal the line of treatment.

The author describes his technique of scaling the teeth. He uses a mixture of sulfuric acid (15 drams), phloroglucin (1 dram), and distilled water (12 ozs.) as a means of decomposing subgingival tartar deposition and facilitating its removal.

—*G. H.*

355—Le Norcy: **Paradentosis und endokrine Druesen.** Z. Rundsch, 17: 753. 1936.

Disturbances of the endocrine glands as well as bacterial influences must be considered in the etiology of paradentosis. It has not yet been found what gland is of greatest importance and influence. The liver as a factor is very important. It produces sugar, urea, antithrombin, fibrinogen and among others a hypotensive hormone and possesses a regulating function for the distribution of the vitamins. There are very close relations among the glands of the endocrine system where the liver function is of dominating influence. In case of its insufficiency paradentosis occurs.

356—Lisser, H., M. D., and Shepardson, H. C., M. D.: **The relation of endocrinopathies and calcium metabolism to abnormal conditions of the teeth, especially paradentosis.** D. Cosmos, 78(1): 67-73. 1936.

The authors attempt to evaluate the present status of our knowledge of Ca metabolism and the relationship between the endocrine glands, teeth and their surrounding structures. A brief summary of the metabolism of Ca is presented. This includes the types of Ca in the blood plasma, the role of vitamin D in the absorption of Ca, and the function of Ca in the body.

Endocrine disturbances of Ca metabolism may often result in pathologic conditions of the teeth. Hypothyroidism, acromegaly, pituitary infantilism, diabetes mellitus, infantile tetany, all leave their mark on the eruption, arrangement and condition of the teeth. It does not follow, however, that the endocrine and Ca disturbance alone are responsible as etiologic factors. Paradentosis may frequently occur in endocrine diseases but that such an association may be termed a direct etiological one does not follow and has been neither proved nor disproved.

Hyperfunction of the parathyroids causes a withdrawal of Ca from the skeletal system. Nevertheless, though the teeth may be lost through pyorrhea in this condition they show no evidence of decalcification. This may be interpreted as indicating that teeth do not act as a reservoir of Ca. Moreover, if the parathyroids were etiologically associated with paradentosis we would expect to find tetany and osteitis fibrosa more regularly inasmuch as paradentosis is so common. Yet the former are rare. Furthermore, no one has ever demonstrated redeposition of Ca in the paradentium after surgical correction of hyperparathyroidism.

Considering the wide variety of conditions with which paradentosis may be associated and the lack of any clinical pathognomy in the condition the authors deem it unwise to consider Ca metabolism disturbances resulting from endocrine diseases as a definite etiological factor in paradentosis.

—*G. H.*

357—Rawengel, G.: **Ueber die Polaritaet von Paradentose und Karies.** Z. Rundsch, 34: 1478. 1935.

Rawengel, a follower of Dr. Steiner's doctrine, known as anthroposophy, explains his idea about the phenomena of dental caries and paradentosis which is based upon the anthroposophical principle and philosophy. The relationship between paradentosis and caries is the same as that between the forming and moving forces in the human being. There are moving forces in the alveolar process. The dynamic effect of these forces drive the teeth from their sockets. These forces rotate them, tip them until they are in the right place. These forces are always present, because the migration of the teeth never stops. There is a close relationship between these forces and the soul and extreme disharmonic malposition is a reflection of disharmonic acting spiritual forces. If these forces are disturbed, oppressed, or neglected their biological effect is abnormal, pathological. The spiritual life of the being is upset, unbalanced, and one result of this unbalance is seen as paradentosis. Therapy is based upon the same anthroposophical philosophy. It means, clean the soul and you clean the body and get rid of the disease. Of course, local treatment is always necessary. Carefully selected drugs from the mineral and herbal kingdom are given in homeopathic doses.

358—Rein, C. R., M. D. and Feldman, M. H., D. D. S.: **Mouth lesions resulting from vitamin deficiency.** Dental Survey, 12: 251-256.

The dentist is often consulted by patients with various types of oral lesions and should, therefore, be able to recognize those produced by avitaminosis. These often develop in the mouth prior to their appearance in any other part of the body.

Factors producing vitamin deficiency diseases are—

1) improper diet—frequently found in obese individuals or diet fadists
2) faulty absorption of vitamins due to g-i disease
3) during periods of stress
   a) pregnancy
   b) rapid growth
   c) infectious diseases
4) in altered metabolism of the vitamins in the body

Vitamin A deficiency affects the mucous membranes resulting in cornification. Some believe that a metaplasia or structural change of the mucous membranes of the mouth takes place, rendering the individual liable to infectious invasion of the mucous membrane, especially in the respiratory tract. Other authorities feel that this deficiency may cause abnormalities in the structure of the teeth, resulting in friability.

Vitamin B deficiency results in atrophic tongue which is bald and smooth in appearance. Some ascribe aphthous ulcers and ulcerative stomatitis to a lack of this vitamin.

Vitamin C deficiency shows bleeding from the gums, which are deep red to dark purple in color; gums are hypertrophic and spongy in consistency; gums may swell so as to cover the teeth entirely; gums will bleed on slightest trauma. Teeth become carious and the odor of the mouth is foul.

Vitamin D deficiency shows itself in the presence of a high palate. The relation of caries to this deficiency is still not certain.

Vitamin G deficiency, or pellagra, shows painful fissures and ulceration in the mouth; atrophy of the buccal and lingual mucosa; the tongue is smooth; aphthous ulcers may be present; patient may complain of a sore throat with grey-white patches in the mouth.

A complete knowledge of vitamin deficiencies is essential to the dentists in rendering proper services to the patient with oral lesions.

359—Schindler, Heinrich: **Die Ursachen des Zahnfachschwundes mit besonderer Berueckichtigung der Verhaeltniss bei den Diabetikern, den Kretinen und den verschiedenen Konstitutionstypen, mit Beitraegen eigener Untersuchungen.** Etiology of the alveolar atrophy with special consideration of the diabetic patient, the cretin and the different constitution-types. With the results of own experiments. Schw. Monatsschr. f. Zahnheilk. 4: 245. 1935.

Schindler stresses the importance of local causes for paradentosis which he discusses explicitly in the first part of his paper. They are, neglected mouth hygiene and deposits, bacterial causes, pocket formation, occlusal overstress or lack of stress, changes in the periodontium by pressure or by pull, changes in the bone by pressure or pull, tumors, and senile atrophy. The influence of the local causes may become so dominant that other causes present are hidden. Therefore the necessity of careful examination and valuation of the different symptoms of a paradentosis patient.

In the second part Schindler discusses the general causes as metabolic disturbances, innersecretoric disturbances, diabetes, diseases of the thyroid and parathyroid, of the thymus, pituitary, and the ovaries, also constitution wth regard to the different types, the athletic, the asthenic and the pyknic type, avitaminosis, and disturbances of the blood circulation.

212 persons were examined in order to learn about the influence of diabetic and thyroid disturbances. The following symptoms were observed. Inflammation of the gingival margin, the presence of deposits, the elongation of teeth, the loosening of teeth, pus discharges from the pockets. There was among the diabetic persons a slightly more frequent occurrence of the symptoms than among the normal persons. (17:14.) The diabetic disturbances are therefore not the main cause of the paradentosis. But there is the probability that they favor the occurrence by influences as hypercholesterinemia, increased blood sugar, constitutional disposition. Among the cretins the paradentosis was twice as serious as among the normal persons. It seems that one of the many grave symptoms of cretinism is a weakness of the paradental tissues. The comparison of the paradentium of insane persons with that of normal individuals showed a higher incidence among the first group. The neuropathic constitution seems to favor the occurrence of paradentosis.

The examination comparing different constitutional types of normal persons showed no unique disposition of a certain type for paradentosis. (Of course the paradentium of the pyknic and asthenic types with their short and delicate roots is easier influenced than that of the athletic type.) However if there is such a disposition it is

usually hidden by influences of far greater importance, as diet, general state of health, oral hygiene, and dental treatment.

360—Staerke, W.: **Die Wanderungspara dentose.** The migrating form of paradentoses. D. Z. W. 34, 36. 786, 838.

There are four forms of tooth migration:

(1) A static-dynamical migration caused by too much occlusal stress and by bone-changes.

(2) Migration caused by bone apposition in the periodontal space. It occurs very often in the lower front teeth. It is interesting to observe that in case of a devitalized tooth this migration does not take place.

(3) Nutritive disturbances of the normal apposition and absorption of the inner cortical layer of the alveolar bone and of the cementum. Tissue metaplasia. May be caused by lack of calcium on account of insufficient vitamin D. The decrease of the eosinophile cells of the anterior lobe of the pituitary gland with increasing age is supposed to be in relation to the physiological tissue absorption, especially of the alveolar bone.

(4) Blood and tissue pressure in the paradental soft tissue parts cause migration which is based upon a lymphatic infiltration of the tissue, analogous to the genesis of elephantiasis. This form is of angioneurotic nature and related to Quinke's edema.

Briefly, migration paradentoses are caused by an alternating effect of dystrophic moments with static influences and vegetative disturbances.

361—Thielemann, K.: **Das Gleithindernis als etiologischer Faktor fuer die Lokalisation der Paradentose.** The gliding obstacle as etiologic factor for the localization of paradentosis. D. Z. W. 50: 1194. 1935.

It is known that disturbances in occlusion favor the development of a paradentosis. Thielemann shows by means of instructive pictures the origin of occlusal disturbances. That which hinders the gliding movement of the jaws is called gliding obstacle. It is either unilateral or bilateral. It is the duty of the practitioner to prevent such gliding obstacles.

362—Tiegel, Hans: **Gedanken ueber Gingivitis and Stomatitis und deren naturheilerische Behandlung.** Some thoughts about gingivitis and stomatitis and their treatment by naturopathy. Z. Rundsch., 40: 1772. 1936.

Certain forms of gingivitis and stomatitis which are not cured by the usual therapy are so-called idiopathic forms and are a sign of a wrong diet. They can be cured by changing and correcting the diet. If treated locally and symptomatically only, they would not respond to the treatment.

363—Wikblad, Ake: **Jaemfoerelse mellan varikoese, haemorroidala och paradentala kaerlfoeraendringer och deras orsak.** Comparison among varicous, hemoragious and paradental vascular changes and their causes. Odont: Tidsk.: 1935. abst. Zentrbl. f. d. ges. Zahn, Mund und Kieferheilkunde., 3: 103. 1936.

Wikblad describes the supply of blood vessels in the paradentium and compares it with the rectal blood vessel physiology and the varicosity. He thinks that every pathological state is a form of allergy with small changes of the blood vessels. The vessel dilatations, present in the paradentium as well as in the mucosa of the intestinal tract, which are caused physiologically in order to act as a cushion against too much pressure, may degenerate into varicosity caused by unknown endogenous forces which are accompanied by disturbances of hydrostatic pressure. A slowed down blood circulation will occur with further toxin injuries at the endothelium of the vessels. An exudative inflammation which aggravated by abnormal occlusal stress with stasis and tissue necrosis will show the picture of a paradentitis. The therapeutic methods should hasten the circulation and produce a constriction of the varicosis dilatations.

(e) Symptomatology and Diagnosis

(Continued from 7(2):105, July 1936)

256—Blankenhorn, M. A., M. D. and Spies, Tom D., M. D.: **Oral complications of chronic alcoholism, significance, recognition, and treatment:** J. A. M. A., 107(9): 641. Aug. 27, 1936.

Specific oral complications were found in 60% of a series of 200 patients with chronic alcoholism and pellagra, the tongue, lips, buccal mucous membrane, gums, and palate all being concerned and in the general

stomatitis. Without treatment ulcers develop on the tongue, the gums become red and swollen, and large areas are involved in a condition similar to severe pyorrhea. The lesions respond almost immediately to adequate specific therapy if applied early in the disease; this consists of a nutritious diet of 4000 calories a day, and 75 gm. of yeast and liver extract. Such lesions frequently precede alcoholic pellagra, and are considered manifestations of a serious deficiency state. Several illustrations show tongue involvements.

—*Copy.*

257—Boenheim: **Paradentose bei Diabetes mellitus und Gicht. Relation of paradentosis to diabetes and gout.** Med. Welt. 1934. 13. Abstracted in Ztachr. f. Stom. 2: 117. 1935.

Boenheim found among 800 diabetic patients only an occurrence of paradentosis in 8%. It is therefore not a symptom of diabetes mellitus, though it should not be forgotten to examine every paradentosis patient for diabetes and make a sugar test. In chronic cases of paradentosis the amount of uric acid should be determined and a purin free diet ordered.

258—Breuer: **Neue Untersuchungen ueber den Allgemeinzustand bei Paradentose.** Recent investigations about the general state of health of a patient who has paradentosis. Parad. 1: p. 5. 1936.

Author reports four cases of enlargement of the spleen, type Gaucher, which showed marked changes of the paradentium. In one case a dystrophic paradentoses was present, in the other three cases an inflammatory paradentoses. After removal of the spleen an improvement of the paradental symptoms was observed. Metabolic researches showed that the decrease of the specific-dynamic protein effect does not always cause the same paradental reactions. Sometimes a dystrophic form, another time an inflammatory form of paradentoses has been encountered. He saw paradentoses following a grippe, a hyperglycemia and diseases of the liver. Both forms of paradentoses could not be exactly differentiated by means of capillary-microscopic examination.

If the patient has paradentosis his health is generally in poor condition. Asthma, migrane, subfebrile temperatures, hepatic insufficiency, chronic rheumatism, are often found. It is believed that infection of the gingiva or the tonsils are often secondary infections of an internal primary infection. If germs from a granuloma or a paradentosis come directly into the circulation, a hepatitis or cholecystitis or even a kidney defect may be caused. On the other hand hepatic disturbances may influence the calcium content of the teeth. The gingivae bleed easily as in general hemorrhages which are often found with hepatic insufficiency. Misuse of drugs which are prescribed for liver conditions, may harm the teeth. Morphinomania may cause a painless extensive caries by decalcification. The same may happen by an unbalanced diet used to conserve the activity of the liver. It is therefore necessary to have a proper mouth hygiene and to give a sufficient amount of calcium in case of hepatic diseases.

259—Bulleid, A.: **Diseases of the gums and their manifestations and interpretations.** British D. J., 61: 523. Nov. 2, 1936.

The author presents some of the gum lesions which the dental surgeon may be the first to see.

1) Catarrhal conditions of the upper respiratory tract. Hypertrophic gingivae, hemorrhagic in character, with a sticky oral mucosa.
2) Vincent's infection symptoms presented. Early treatment stressed. Etiology, mainly *B. fusiformis and T. Vincenti.* Distinguish from scurvy, diphtheria, and acute leukemias.
3) Scurvy-swollen gums, hemorrhagic. Teeth loosened. Typical mouth odor.
4) Acute leukemia—Bleeding gums, harder in character than in Vincent's Inf. Blood exam. important.
5) Acute streptococcal gingivitis-red line about the necks of all the teeth.
6) Pyorrhea—Can be checked but cannot be cured. Serial gum smears help to keep dentist posted during alterations in gingival changes.
7) Thrush in young people, and in adults suffering from tuberculosis, cancer, or streptococcus infection. Large white patches in and about the mouth. Caused by *sacharomyces albicans.*

8) Measles—Koplik spots—small papules on inflamed areas surmounted by white tops.
9) Scarlet fever—rash appears on soft palate down on the molar area. Spontaneous gingival bleeding.

Ulcerative states found in the mouth:

1) Simple traumatic ulcer.
2) Dyspeptic ulcer.
3) Syphilis—primary and secondary phase. Ulcers not amenable to treatment should be regarded with suspicion.
4) Leukoplakia.
5) Streptococcal glossitis — red tongue, cracking at the angles of the mouth.

Mouth manifestations of skin lesions:

1) Lichen planus—hard, streaky patches.
2) Erythema multiforme—due to chronic infection and sensitization to streptococcus.
3) Lupus erythematosus — leukoplakic patches with red atrophic centers. Stippling points of leukoplakia.
4) Lupus vulgaris.

260—Costen, J. B., **Glossodynia: Reflex irritation from mandibular joint as principal etiologic factor.** Arch. Otolaryngol., 22: 554. 1935. Abstr., J. A. D. A., 23: 165. Jan., 1936.

The author found in a study of ninety patients with symptoms of neuralgia associated with the temporomandibular joint, ten patients with burning pain in the tongue and pharynx. Repositioning of the mandible gave complete relief to these patients. In the detailed report on the ten cases in which glossodynia resulted, it is interesting to note that all had some type of malocclusion, with consequent temporomandibular changes. In a number of these cases the jaws were repositioned by construction of properly articulated dentures. Associated with glossodynia, other symptoms were intermittent impairment of the hearing, dizziness, a feeling of stoppage of the auditory meatus, headache and a burning in the nose and throat. Later, herpes in the external auditory canal and on the buccal mucosa was noted in some of the cases. The author believes the burning is produced reflexly owing to pressure of the condyle on the auriculotemporal nerve and transmission to the lingual nerve. Some of the patients spoke of a metallic taste and a stinging sensation on the tongue. Close connection of the chorda tympani nerve to the tongue might account for these symptoms. By proper placing of the dentures, or a disk, the vertical distance between the jaws was increased, with the result that the head of the condyle was moved down and forward. This released the pressure on the nerves passing in the region of the joint and relieved the patient.

—*M. W. McCrea.*
—*Copy*

261—David, Vernon C., M. D., and Loring, Mark, M. D.: **Extragenital lesions of lymphogranuloma inguinale.** J. A. D. A., 106 (22): 1875. May 30, 1936.

Following a comprehensive study of hundreds of cases of lymphogranuloma inguinale, the authors find that in addition to rectal involvements, which are most common, there are other extragenital lesions which occur more frequently than has been suspected. Four such cases are described in which there were ulcerating lesions of the colon, pharynx, palate, tongue, and oral mucous membrane. In this last, in which tongue and floor of the mouth were extensively affected, the only possible etiologic factor was a slight cut produced from licking the glue on envelopes. The lesion was treated ineffectually with caustics, the lymphatics became involved, with chills and fever supervening; a flat ulcer with raised edges and foul base extended from floor of mouth onto tongue. The diagnosis lay between syphilis, tuberculosis, and granuloma of unknown origin, but Kahn reactions were negative, and no tubercle bacilli, spirochetes, or fusiform bacilli were found. Because of the unusual character of the lesion, the Frei test was made and was strongly positive; correct therapy was thereupon instituted. The importance of contact infection in this disease has not been sufficiently emphasized, and surgeons have been infected through injury to their fingers during operation. The Frei intradermal test should be more frequently used in granulomatous lesions of unknown origin. The treatment has not been satisfactorily developed, but the authors' experience with 1% antimony and potassium tartrate and with fuadin intramuscularly offers some prospect of amelioration of the disease. Among the illustrations are several of tongue involvements.

262—Gilpin, Sherman S., M. D.: **Glossodynia.** J. A. M. A., 106 (20): 1722. May 16, 1936.

Gilpin states that glossodynia is of comparatively rare occurrence, only 48 cases having been recorded at the Mayo Clinic, but it is of importance because of the extreme distress incident to it (it predominantly affects people whose threshold for pain is relatively low), and because of inadequacy in coping with it. The author hopes to stimulate interest by attempting to determine factors in its etiology and the means by which relief has been obtained. There is great paucity of material on the subject in the literature, but Gilpin quotes Butlin and Spencer (*Diseases of the Tongue* (1900)), Sluder, Engman, Beall, McPhedran, Marshall, Sellei, Morelli, Michael, and Montgomery and Culver, in chronological order from 1918 to 1932, and one notes a great variance of opinion as to etiology and treatment of the condition; "neuropathic disposition," "dyspepsia," "infection," "tonsillitis," "hyperacidity," "cancerophobia," "migraine," etc. Of the 48 patients at the Mayo Clinic 37 were women; 35 of these were more than 50 years old, although ages ranged from 20 to 73 years. Gilpin concludes that more women are affected than men, and the onset of the disease is more frequently after 50 years. There is a high incidence of other pyschoneurotic symptoms accompanying this manifestation. A fair proportion suffer also from arteriosclerosis of the central nervous system, and a few from depression; cancerophobia is present in a few cases. The teeth had been removed in about one-half of the sufferers. ("Doctors and dentists advise extraction in these cases rather frequently on empirical grounds.") Gilpin seems to consider neuropathic pre-disposition a most significant etiologic factor. Relief may result from various forms of psychotherapy alone, local treatment being of no avail usually.

263—Hesse, G.: **Ueber Elephantiasis Gingivae und ueber dentale Tumoren.** Mediz. Klinik: 1936. Abstracted in: Z. Rundsch. 8: p. 358. 1936.

There is a difference between gingivitis hypertrophicans and the hypertrophy of the gingivae. The first one is mostly caused by inflammation, the second one may follow the first one but may occur also congenitally. It is rare in women. The hypertrophy is sometimes so strong that it is impossible to close the lips, the teeth may be pressed away from each other and absorption of the alveolar bone often takes place. It is necessary to remove the tissue surgically. It was observed that in case of sacrificing the teeth, no recidivation occurred. The odontoma is discussed and a few cases cited.

264—Hulin, Ch.: **Die klinischen Erscheinungsformen der Paradentose und ihre Behandlung unter besonderer Beruecksichtigung der Tiefensklerose.** Clinical forms of paradentosis and treatment with special consideration of deep sclerosis. Korresp. bl. Zahnaerzte. 1935. No. 1, 2.

Hulin thinks that the word paradentosis is only of super-ordinary character and is in no exact relationship to the various clinical symptoms. He proposes the following classification of paradentosis. (*See table on page 119.*)

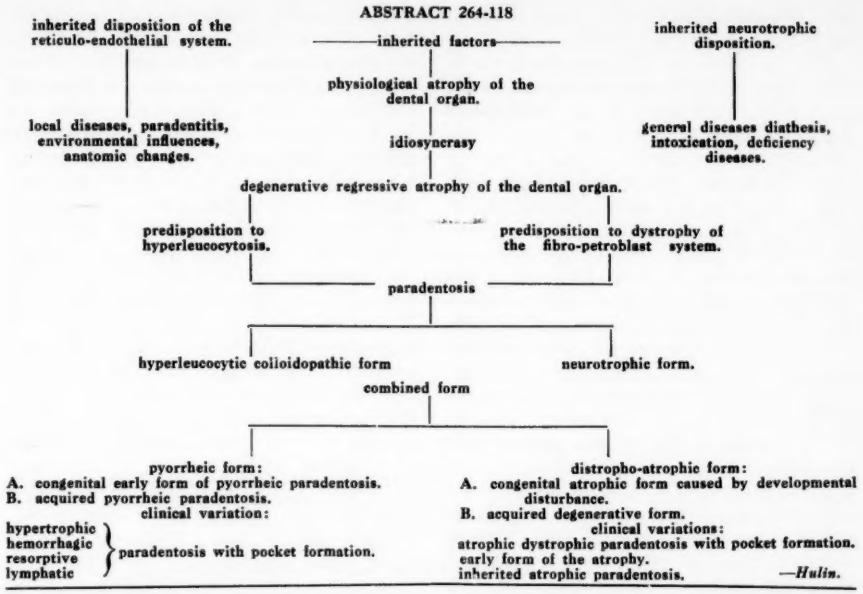
The cause of the most frequent occurance of the pyorrheic form of paradentosis is after Hulin a general dystrophi, a dietary disturbance (arthritism, hepatic insufficiency, idiosyncrasy, colloidopathy). A never missing symptom of this form of paradentosis is the pathological pocket formation.

It is advisable to read the article as a whole because it would go beyond the frame of an abstract to consider all the different ideas, explanations and therapeutic methods Hulin discusses in his article.

265—Krey, H.: **Ueber die Kapillaren der Mundschleimhaut unter dem Einfluss von Salvarsan und Schwermetallverbindungen.** The influence of salvarsan and other heavy metals upon the capillaries of the oral mucosa. Parad. 4, 5, 6: 75; 81, 116. 1936.

The influence was determined on the one hand by clinical control and on the other hand by microscopical observation of the capillaries of the mucous membrane, of the nail cuticle, forearm and breast. Furthermore, the deposits of sulfides in the tissues and the reason for their occurrence was observed. The importance of the constitutional disposition was given special attention.

In 3 out of the 4 cases of lead poisoning the patients had also a paradentosis with the corresponding circulatory and degenerative disturbances in the capillary system.



The fourth case in contrast showed no symptoms of paradentoses though an acute and distinct lead poisoning was present.

Vasoneurotics and those with endocrine disturbances were most effected by bismuth, calomel and salvarsan. After removal of the poison a more or less total restitution was observed in those patients with a strong and stable constitution.

The sulfide deposit in the tissues does not absolutely require the H_2S present in the mouth but sulfur can be taken directly from the damaged cells. Localization is not confined to the gingivae of the mouth. The condition of the capillary system of the gingiva is very important if it is affected by metals and metalloids. The reduced function of the capillaries produces a disposition to paradentoses. Organic weakness and constitutional inferiority are a very important factor. Very often disturbances in the vegetative and endocrine systems as well as allergic tendencies were frequently found.

266—Landgraf, E.: **Kritik der Stoffwechseluntersuchungen im Dienste der Stomatologie.** Dtsche. Zahn. Mund. Kieferhlk. p. 307. 1936.

It has been found that paradentoses is not only caused by local disturbances but that general disturbances of the metabolism and the endocrine system are of great importance. All cases of paradentoses which do not respond to any local therapy may be caused by metabolic disturbances and should be examined for the metabolic rate. They are usually distinguished by a diffuse atrophy. On account of the variability of the general medical and dental conditions the practical importance of the metabolic tests is a very limited one, and the interpretation of the result requires a general medical knowledge. This is not a dental but a medical problem. The close cooperation with a physician is therefore required. Landgraf considers the examination of the sugar metabolism as a practical and most important procedure.

267—Love, A. A.: **Manifestations of leukemia.** Brit. D. J. 60: 573. 1936.

This is a lengthy and extremely valuable paper abstracted from the Archives of Otolaryngology, Feb., 1936. The manifestations of mouth and throat in leukemia, with a full bibliography are presented. Leukaemic lesions are often misdiagnosed in otolaryngologic and stomatoligic practice or their significance entirely overlooked.

In the nose there are only two manifestations of the disease: epistaxis and leukemia cutis. Of these the former is the more com-

mon. Nose bleeding is often the first symptoms of the patient and as it may have many causes leukemia is often overlooked. In every case of persistent and uncontrollable nosebleeding a complete blood count should be made. The same may be said for the oral mucosa.

In the mouth the symptoms are more varied. In some the gums are pale and of normal contour; in others, they are hypertrophied and bleed at the slightest touch and resemble scurvy. In some cases the gums simulate Vincent's angina and in others there is actual necrosis of the gums usually starting around the molars. At times there is an area of necrosis on the cheeks or lips.

In the throat the lesions usually appear on the tonsils which may be almost completely destroyed before the patient seeks attention.

Those cases in which the symptoms were oral are of much interest to the oral surgeon and illustrates the significance of oral lesions as being often an early sign of leukemia. Since the majority of the patients die the importance of an early and correct diagnosis which involves a differential blood count cannot be stressed too much.

268—Luedtke, G.: Ein Beitrag zur Aetiologie der Paradentose. Z. Rundsch. **3: 111. 1936.**

Luedtke reports two cases of Raynaud's gangrene which showed innersecretoric disturbances and paradentosis besides. Among the symptoms of the disease are disturbances of vasomotility and of neurotrophic kind. There is an irritative weakness of the vascular and nervous system. In both cases the teeth hurt when chewing. Later they became loose and bone and gingivae receded. Within 2 years all teeth were lost or had to be removed. X-rays showed a horizontal alveolaratrophy typical of paradentosis. There was no gingival inflammation present.

269—Murphy, William P., M. D.: Dentistry in relation to the blood dyscrasias. J. A. D. A. 23(4): April, 1936.

The author emphasizes the importance of the coöperation of physician and dentist in the management of disease, especially the blood dyscrasias. He briefly describes leukemia, purpura hemorrhagica, agranulocytosis and the anemias, outlining some of the symptoms that would suggest a blood examination before any operation is performed.

Dr. Murphy has emphasized the importance of clearing up the infections present in anemic patients, and calls attention particularly to the importance of extreme care in handling of patients with pernicious anemia. These patients are very easily disturbed by any unusual circumstance, such as fright, worry and surgical procedure, and may as a result show a sudden and often marked drop in blood count and perhaps the beginning of nerve disturbances, which are the most difficult feature of the disease to control.

Because of the frequent occurrence of a soreness of the tongue or mouth as one of the first symptoms of pernicious anemia, the patient may first consult his dentist.

—J. A. Sinclair

270—Ohashi, Kuchiki: Ein Fall von Alveolaratrophia diffusa praecox. Korrespl. bl. Zahnaerzte. 8: 277. 1935.

The authors bring a report of alveolaratrophia diffusa praecox in a 16 year old girl. There is no distinct cause known but the authors believe, supported by the medical report, that this symptom is due to an insufficient constitutional development (1-2 years retarded). The basal metabolism is normal and there are no changes in the blood calcium and blood sugar. This case corresponds to the ovarial type of Citron and the disease is caused by endocrine disturbances.

271—Oxenieu, K.: Primary diphtheria of the oral mucosa. Deutsche Med. Wchnschr: 1803. Nov. 8, 1935. Copy of Abst. J. A. D. A. 1936.

The author reports two cases of primary diphtheria at the site of erupting deciduous teeth, with no other mucous tissue involved. Both patients were between 1 and 2 years of age. The familiar dirty grav patch appeared behind the upper premolar region in either case. A swab confirmed the diagnosis of diphtheria. After the injection of antitoxin units, the membrane disappeared. It is believed that the infection was contracted by the patients' rubbing the fingers over these areas.

—J. Frank Hall.

272—Raab, H.: Ueber symmetrische Gingiva-Keloide im Oberkiefer. Symmetrical gingival keloids of the maxilla. Dtsch. Zahn, Mund, Kieferhlk. **8: 555. 1936.**

Two cases of tumors located at the ends of the maxillary alveolar process on both sides were diagnosed microscopically as symmetrical gingival keloids. The cause for the origin of these tumors is probably a slight local traumatic irritation which enhanced by congenital pre-disposition of the connective tissue and its therefore abnormal reactive tendencies may have brought about the development of the hyperplastic growth.

273—Roth, K.: **Beobachtungen bei Diabetikern mit Paradentose.** Reports of observations of diabetic patients with paradentoses. Parad. 3, 4: 53, 67. 1936.

Paradentoses and diabetes occur very often together. Roth reports in 100 diabetic cases 58.8% occurrence of paradentoses. This high number contains the initial paradentosis and the preparadentoses. In earlier reports paradentoses was found only in 1/6% associated with diabetes but if looked upon from the side of diabetes nearly 60% was found associated with paradentosis. It can be said therefore, that diabetes is not always accompanied by paradentoses.

In young athletic types with diabetes, only a slight loosening of the teeth is present without gingival changes. This will increase in the later state and with higher sugar contents and will finally lead to serious paradentoses and loss of teeth.

In adipos-pycnic women after the climacterium usually very severe marginal inflammation, loosening of teeth and atrophy of the bone appear already with slight but constant increase of the bloodsugar. Roth believes that in these cases a distinct organic disposition for paradentosis is present which leads to the loss of a large part of the masticatory apparatus within a year.

In allergic or innersecretoric disturbed diabetic women there is a tendency to inflammatory disturbances which later lead to marginal atrophy. A small part of paradentoses cases is a symptom of innersecretoric disturbances to which diabetes also belongs.

274—Schaer, E.: **Recherches sur l'état local et general de quelques malades atteints de paradentose.** Schweiz. Mschr. Zahnhlk. 4: 331. 1936.

Of 19 paradentosis patients of different age and sex the calcium content of the blood was normal in 9 cases, above normal in 8 cases and in 2 cases below normal. The phosporcontent was in 3 cases normal, in 12 cases above and in 4 cases below normal. In 7 out of 16 cases a disturbance of the parathyroid glands either alone or together with dysfunction of other glands was found. In all other cases a decreased function of the gonads or of the pituitary gland alone or a simultaneous disturbed function of the parathyroid and suprarenal gland was found. The treatment of innersecretoric disturbances must be done with caution. Nutrition is important in regard to vitamins, the nervous system and inner secretion. Blood tests did not reveal anything special except a slight lymphocytosis. X-ray examination of the skeleton showed only in one case a deficient calcification. The paper gives a very instructive picture of the unusual forms of paradentoses.

275—Sedillot, Jacques: **Gicht und Paradentose.** Gout and paradentosis. Le siècle dentaire. May 15, 1935. Abstracted in Z. R. 24: p. 1067. 1935.

Gout appears during childhood and youth in the form of eczema, urticaria prurigo, or asthma on the tissues of the ecto- and endoderm. In the adult it appears in the form of rheumatism, gout, or lumbago on the tissue of the mesoderm. Dental caries is one of the most frequent diseases of an organ of the ectoderm during childhood, while paradentosis appears on the tissues of the mesoderm in the adult. If the patient is treated for his gout it may have a favorable influence upon the paradentosis. Sedillot believes that the inactivation of the liver acts indirectly upon some endocrine gland which in turn causes the paradentosis by its functional inactivity. He suspects especially the thyroid and the parathyroid.

276—Vincent, R., and Thomas, L.: **La pathogenie et le traitement de la pyorrhee.** L'Odontologie. 74: 76-84. 1936.

Vincent reviews his theories on the etiology and pathogenesis of pyorrhea. In particular he points out that the disease differs essentially from an anaphylactic state. As a chronic suppurative disease pyorrhea is distinctly different from anaphylaxis which

is amicrobic, rapid in evolution and spontaneous in cure.

Vincent believes that pyorrhea is not an independent disease of the gingival regions but one of the many symptoms of a general pathologic condition preceding or concomitant with a distant focus, often unrecognized. Both the suppurative and nonsuppurative forms of pyorrhea have a common symptom, alveolar resorption. In the dry form there is evidently an endocrine disturbance. The suppurative type always manifests an existing infection with a clinical septicemia. The gingival infection is part of the septicemia syndrome. Gingival hemoculture reveals the presence of streptococci most often. The gingiva being a region of terminal capillary circulation possesses an elective trophism for the bacteria in the circulation. Therefore, treatment should be directed towards suppression of the septicemia. Local treatment is also necessary to remove local foci which are capable of perpetuating and recausing the gingival infection. Vincent uses an autovaccine isolated by gingival hemoculture to suppress the distant focus of infection and the destruction in situ of the active organisms.

—*G. H.*

277—Wannenmacher, E.: **Umschau auf dem Gebiet der Paradentose.** Survey of paradentoses. Ztrbl. fuer Zahn, Mund, Kieferhlk. 4: 161. 1936.

A complete survey of the different theories and therapies of paradentoses which are known so far. The different classifications, nomenclature, etiology, and the local and general therapy are discussed. The ideas and theories of different authors are given in abstract form.

278—Weski: **Die Aktivierungstherapie der Paradentose.** Parad. 1: 13. 1936.

Weski distinguishes three groups of paradental diseases:

(1) The hypertrophic form of tumor-like character. The so-called paradentoma (Balogh). To this group belongs the epulis and the elephantiasis.

(2) The inflammatory form, the paradentitis, as gingivitis hypertrophica and gingivitis simplex.

(3) The atrophic form, the paradentosis,

a. partial atrophic paradentoses.
b. total atrophic paradentoses.

A short survey about the importance of the constitutional disposition for paradentosis is given and the different therapeutic means to influence directly the constitutionally inferior paradentium. The physical methods such as ultraviolet rays, high frequency currents, short waves, and chemical methods as oxygen (Dunlop), fibrogenine injectable (Hulin), injection of paradental extracts may be used. The usual local dental treatment should not be forgotten.

(f) Treatment

(Continued from 7(2): 122, July, 1936)

421—Acevedo, Adolfo: **Some modifications on recalcification in dental caries and parodontosis,** in: Revista Odontológica, 23:660-669. Oct., 1935. Abstract D. Cosmos, 78:113. Jan., 1936.

After reviewing the different theories of caries and paradontic pathosis from the biologic points of view, the author reaches the following conclusions:

1) The prophylactic treatments for caries and parodontosis can not be standardized, for the factors entering into the problem of the modifications of the metabolism which react upon the buccal medium are numerous and vary greatly according to the subject. Therefore, collaboration of the internist is necessary to indicate diets of patients which would influence the digestive cardiovascular and especially the neuroincretoric functions.

2) The calcic element is of great importance but is not the only one, so its biologic function should be considered in conjunction with the diet.

3) Any diets that increase alkalosis in cases predisposed to caries, and acidosis in cases predisposed to parodontosis are contraindicated. It is necessary to prescribe alkalies in pyorrhea and to apply acid in the therapeusis of caries.

4) Regarding Ca metabolism, in the majority of cases the lack of this element in the tissues is not due to lack or deficiency of Ca in the diet but to the biologic function (acido-basic equilibrium.)

When Ca therapy is indicated, the author prescribes calcium lactate in doses of 2 grams daily *per os*, or 1.5 gr. by injection. In caries, few sweet and farinaceous foods should be allowed for they lead to alkalosis,

and also because these diets inhibit the functions of the incretoric glands. In parodontosis, alkaline diets; farinaceous sweets, fruits and fresh vegetables; little meats, salted food, fish, preserves, alkaline drinks; general hygiene. Small quantity of alcohol, coffee. Sometimes it will be necessary to alkalinize the system by therapeutic means.

—*Copy.*

422—Allen, H. S., D. D. S.: **Periodontia based on facts, not fads, in practice.** J. A. D. A., 23: 87-92. 1936.

Periodontal infection is the result of two factors, local or extrinsic, and tissue resistance, or intrinsic. The former includes traumatic occlusion, food impaction, calculus, bacterial invasion, etc. The intrinsic factor is dependent on the physiologic function of the local tissues which are in turn effected by the general condition of the body.

A systematic classification of tissue changes should include: 1) change in color; 2) change in form; 3) change in density, and; 4) change in line of attachment; mobility of teeth; presence of pus. Under changes in form, the author points out that shrinkage indicates poor resistance, while hypertrophy and swelling signifies a good degree of resistance.

The value of x-rays in diagnosing pyorrhea is variable. Clinical evidence must not be neglected in favor of roentgenographic information, since the latter gives no information concerning the activity of the condition and the resistance of the tissues.

The treatment of pyorrhea is not a matter of instrumentation exclusively, but of understanding all the factors involved and the correction of those factors. The instrumental methods include the conservative curettage, gingivectomy, and the conservative flap method. The author suggests that in the flap technic, the omission of septal sutures and the use of a surgical pack will result in less chance of septal destruction.

The complex subject of diet had best be left alone, until more is known about it. Because of McCollum's work, Dr. Allen feels that the lesions produced by Howe, by scorbutic diet in monkeys, were due rather to a mineral shortage than lack of vitamin C. Likewise, Hanke's orange juice therapy produced results because of the P content of the juice rather than the vitamin intake. Inasmuch as the prescription of diet entails a detailed study of the individual and his own body reactions such prescribing is best left in the physician's hands.

—*G. H.*

423—Antoniotti: **Autopyovaccine und ihre Anwendung in der Mundheilkunde.** Autopyovaccine and their use in the dental therapy. Parad. 11: 238. 1936.

Pus is taken from the gingival pocket and a vaccine is prepared in the usual way. It is filled into ampulles of ¼ ccm for subgingival and of 1 ccm for subcutaneous injection. 1500 million germs per ccm are present in the subgingival solution and 500 million germs in the subcutaneous solution. The injection is carried out in the usual way. This method showed good results in the treatment of paradentosis. The exudation from the pockets and the inflammation of the gingiva will gradually disappear. The autopyovaccine applied in this concentration will not cause either local nor general disagreeable symptoms.

424—Binet, Prof. Léon: **Calcium metabolism and its regulation,** in: Odontologie, 74(6): 374. June, 1936.

Numerous experiments have shown lately what an important role the parathyroids play in Ca metabolism. The role played by these glands in the accepted decalcifications of pregnancy are no longer questioned. Phosphorous, light and vitamin D also have a part in Ca metabolism.

While in earliest infancy fixation of calcium is most important, in adults the excessive fixation of calcium is dangerous, leading often to calcification of small blood vessels.

Sodium citrate and iodine medication may be used effectively to fight such excessive calcification.

425—Bircher-Rey: **Diagnose und Therapie der Stoffwechselstoerungen bei Paradentose.** Diagnosis and therapy of metabolic disturbances in paradentosis. Paradentium, 4: 77. 1935.

This physician believes that parodontosis is a symptom of a general dietary disease. His viewpoint is based upon an experience of 40 years with the dietary treatment after Bircher-Benner, where even the most serious cases of parodontosis were practically cured. He believes the following three

items of importance for the maintenance of metabolic equilibrium:

1) Natural correlation in the daily diet.
2) Condition of the organs of digestion.
3) Dynamic of the blood circulation.

He considers it a necessity that the physician and the dentist coöperate in order to practice causal therapy.

426—Balatovsky, and Klimenkov: **Local avitaminosis; treatment of ulcerative stomatitis with vitamin A.** Odontologie, 74(11): 675. Nov., 1936.

The authors have used carotin locally, (Vitamin A), and in certain cases have obtained good results. The therapeutic effect takes place as if the cells were lacking in a vitamin which by external introduction led directly to cure. Carotin is able to cure tissues locally even if the blood contains a normal amount of this vitamin.

Weak solutions of carotin did not appear to give very good results. In cases of ulcerative stomatitis solutions of over 10% were the effective concentrations. The sedative effect of carotin is unquestionable, taking effect very rapidly. Carotin possesses antitoxin effects as well as being a catalyzer to the tissues.

In all cases curettage should precede treatment.

427—Charters, W. J., D. D. S.: **Pyorrhea and a surgical treatment,** in: Dental Survey, pp. 54-56. March, 1936.

Dr. Charters advances the theory that such diseases as eczema, abnormal blood pressure, etc. may be caused by pyorrhea or apical abscesses. Further, he states that pyorrhea is a disease of the alveolar process and not of the gums. He divides the condition into three divisions.

In the first group there is an inflamed gingiva. This can occur between ages 6-12 years, and can be eliminated with the tooth brush.

The second group is that in which a portion of the alveolar process has been destroyed. This occurs from age of 12 up. Treatment involves curettage causing an eschar on the peridental membrane. To this concentrated lactic acid is applied. Before treatment the area is anaesthetized by injecting a local anaesthetic between the tooth and the gum.

Class three cases are more advanced with deep pockets. The gum is anaesthetized and the pockets are eradicated surgically by removing the soft tissue and smoothing the bone.

Vincent's infection is treated with concentrated nitric acid applied to the affected tissue.

The author claims that these measures have met with gratifying success in his own private practice.

—*S. H. S.*

428—Daley, D. M. D., Healy, M. D., and Sweet, A. B.: **Chromic acid and gingival lesions,** in: Apollonian, 11: 219-222. 1936.

Local treatment of gingival lesions with medicaments should be based on the following factors:

1. Character and course of the infection.
2. Type of organisms involved.
3. Character of tissue involved.
4. Effect of the chemical on the soft tissues, enamel, cementum, and fillings in the mouth.
5. Relative pleasantness to the patient.

Chromic acid has an injurious effect on the enamel and cementum and even immediate neutralization does not prevent roughing and etching of the enamel and cementum. Severest effects on tooth structure are obtained by 7-35% acid solutions. Use of chromic acid where it may come into contact with teeth is contra-indicated.

—*G. H.*

429—Euler, Hans: **Vitaminforschung, Zaehne und Zahnbett.** Vitamin-research, teeth and toothsocket. D. Z. W. 28: 648. 1935.

Euler comes to the conclusion that it is important that:

1) the diet must have the necessary amount of vitamins and minerals in order that the teeth and their holding mechanism will not lose their resistance against caries and parodentosis during the time of their development.
2) the dentist must therefore consider the question of nutrition and concentrate his interest upon it when questioning and advising the patient.
3) the pregnant woman must have sufficient amount of vitamins and mineral salts in her diet in order that a healthy and strong tooth formation will take place in the child.
4) in case of multiple caries the dentist

should consider the possibility of a wrong diet and as an etiologic factor question the patient in that direction, and teach him the value of a better diet.

5) in case of a parodontitis the dentist should know that a deficiency disease may cause it.

430—Fortier, E. C., D. D. S.: **Surgical eradication of pyorrhea,** in: D. Survey, 12: 401-403. 1936.

A good rule to remember in determining the prognosis of pyorrhetic teeth is that if infection has passed much beyond the gingival third of the root, or the bifurcation is exposed, attempts to save the tooth are not favorable. Surgical eradication of pyorrhetic pockets is of the greatest value and the technic is simple.

The depth of pockets are marked with gum-nicking pliers and bleeding points are joined with curved knives labially and lingually. Interproximal tissue is removed with right angled knives and all deposits scaled away. The alveolar bone is smoothed down, area irrigated, and a surgical pack applied and allowed to remain in place for about ten days. Phophylaxis and home care follow. Several diagrams are presented.

—*G. H.*

431—Fuchs, H.: **Erfordert die Heilung der Paradentose Kurbehandlung?** Does the cure of paradentosis require certain treatment in a sanatorium? Z. Rundsch, 29: 1248. 1936.

Fuchs' conception about the etiology of parodontosis led him to the establishment of a sanatorium for parodontosis patients only. He claims that a sanatorium is the best way to control the patient; that he follows the prescription and orders of the dentist especially in regard to their diet and usual life at least for some considerable time. His treatment is the following: Care of the skin by air, sun, or water bath, special diet, dental care in form of massage of the gingiva, cleaning of pockets and use of astringents. He requires that patients come to him only after all dental work in their mouths has been completed outside.

432—Goodfriend, S. H., D. D. S.: **Treatment of pyorrhea by a non-surgical pack method,** in: D. Survey, 12: 349-354. 1936.

The author lists the following disadvantages of subgingival curettage in the treatment of pyorrhea:

"1. It is impossible to see the area involved. It therefore requires special skill to plane the root surfaces. 2. Subgingival cavities are impossible to see and therefore neglected. 3. Discoloration of tissue due to inflammation will give the impression that there may be serumal deposits and may cause needless scaling in the planing of root surfaces. 4. Gum tissue forming the pocket due to degenerative changes will cause a predisposition to infection. 5. Deposits, infective cementum, and carious dentin invariably remain due to the hidden operating area."

The author employs a pack composed of zinc oxide, oil of cloves, balsam of Peru, and compound tincture of benzoin. With the use of this pack and heat cautery a complete recession to the base of the pocket is accomplished and scaling then follows in an open area. Tissue repair, either parenchymatous or fibrous, will occur in from 10 to 14 days.

The advantages of the pack method are: 1. It opens the field of operation. 2. Elimination of unnecessary scaling. 3. Reinfection is less likely if pyorrheal pockets are eliminated and a better cure is established.

—*G. H.*

433—Haley, Phillip, D. D. S.: **The blood sedimentation curve as observed during treatment of paradentosis with phenol,** in: D. Cosmos, 78: 623-626. 1936.

The effect of treatments for parodontosis, whether of a surgical character or by use of drugs, upon the blood element is of importance. The degree to which the red cells tend to pack at the bottom of a tube possessing a measuring scale seems to offer an index of that effect. The author submits four cases of paradentosis treated by the use of phenol in the pyorrhetic pockets before instrumentation. In 3 of the cases sedimentation index showed a marked fall during and after treatment.

The absence of toxic absorption of the phenol is explained by the author by the tendency of the phenol to temporarily associate itself colloidally with the saliva. Release of the phenol from this colloidal association is prevented by the use of alcohol in the pockets after phenol is applied.

In conclusion Haley suggests the use of phenol in septic pockets before instrumentation.

—*G. H.*

434—Healy, Daley, and Sweet: **Medical aspects of periodontoclasia and gingivitis,** in: Jnl. Lab. and Clin. Med., 21: 688. 1936. Abstr. J. A. D. A.: 1386. 1936.

In the study of periodontoclasia and gingivitis, the physician and the dentist have two important objectives: consideration of the probable deleterious effects on the general health and the etiology of the condition. Certain cases are acute, and some of these are of bacterial origin and curable by local treatment. The authors feel that the majority of acute and all subacute and chronic cases are not of the infective type. Local or general arteriosclerosis may be the sole cause, a complicating factor, or the end result of the common pathogenesis of periodontoclasia. Blood dyscrasias may deplete the tissues in an analogous manner. In the study conducted, leukocytic counts were made of the blood from the gingiva, finger tip, and ear lobe of each patient. In most cases of gingivitis some etiologic condition is intimately concerned with systemic dysfunction. Some form of allergic disease was revealed through studies of the histories of 36 of the 123 patients considered. Canker or soreness of the gums followed the eating of some particular food in allergic cases. The authors noted that those cases which they considered of an allergic nature showed common diagnostic features; eosinophilia, capillary dilation, increased permeability, and exudation.

—*G. H.*

435—Heinrich, E.: **Konstitutionelle Paradentosetherapie.** Constitutional therapy for paradentosis. Paradentium, 5, 6: 91, 101. 1935.

Heinrich believes that paradentosis is caused mainly by faulty and wrong nutrition. Constitutional therapy approves local treatment of pockets, deposits, and overstress, but first attempts to remove dangerous metabolic products and ashes, to destroy the overacidity of the body, second to renew the organism by means of a natural, vitamin rich diet. He mentions the experiments conducted by Milton T. Hanke in Chicago and claims that their result proves the conception of the etiology of paradentosis. Besides the constitutional therapy he mentions the homeopathic therapy and gives a number of prescriptions which he used successfully. He shortly explains the philosophy of anthroposophy and gives a few prescriptions for the treatment of paradentosis which are based upon the anthroposophical idea.

436—Ivanoff, I. G.: **Buccal infections treated with ozone therapy,** in: Sem. Dentaire, pp. 394, 1059. 1936.

The author has been using ozone insufflation of the tissues about the mouth against many conditions with marked success. In acute swellings, gingival conditions, cellulitis, etc. These ozone injections are made 24 hours apart and are made into the area until all pathological symptoms disappear.

The second article appears to be the answer to criticism of the gas for the author stresses the fact that the purity of the material employed is a vital factor in obtaining good results. Ozone which has been extracted from the air is often impure, containing inert gases.

437—Landsberger, R.: **Zähne, Haare, Naegle.** The teeth, hair, and nails. Ztschr. f. Stomat. 24. 1519. 1936.

Author discusses many similar points which are present in the origin, development, and physiology of teeth, hair, and nails. Successful treatments of various disturbances of the dental apparatus with vaduril are reported. It was interesting to observe that vaduril not only improved the teeth, but also the hair, nails and the general constitution of the patients. This effect is explained by the action of hormones. He uses vaduril for painful tooth necks, simple paradentosis, gingivitis and orthodontic cases.

438—Leclercq: **Contribution to the study of ulcerative stomatitis; clinical review of the use of acridine dyes.** Odontologie, 74: 993. 1936.

The clinical and therapeutic studies which the author has made on stomatitis permit him to make the following conclusions:

Whatever may be the cause of stomatitis it still may be classified along clinico-anatomical lines as well as etiological lines. Whatever the cause there always exists a primary infectious element or a superim-

posed infection. The constant presence of the infectious elements justifies the purely local antiseptic treatment. For such local treatment the author prefers the acridine dyes. These may be used in the form of lozenges made up with 3 mg of active principle. Ten such lozenges make up a daily dose.

The author feels that the treatments are of preventive value and certainly in definitely defined cases of stomatitis results are very good. No contraindications have been noted.

439—Lindenbaum, L. M.: **Zur Therapie der Paradentose.** The treatment of paradentosis. Z. Rundsch, 29. 1248. 1935.

The uncertainty concerning the etiology of paradentosis has led to many therapeutic means many of which are insufficient, wrong, or even contraindicated. Lindenbaum believes that the best treatment for paradentosis is curetting after Younger-Sachs. Disinfection of the paradental pockets is essential and of great value for the success of the treatment. All caustic and coagulating drugs, used in the treatment of the pockets should be avoided because they are noxious to the tissue, weaken it and prevent a regeneration. For the disinfection of the pockets Lindenbaum uses the following mixture:

Rivanol	0,2 gram
Neosalvaran	0,3 gram
Aqua destil	10.0 gram

440—Martin, D. J., B. D. S.: **Indications for extractions in periodontia.** D. J. Australia, 8: 743-761. 1936.

The pathological processes involved in pyorrhea alveolaris do not include necrosis of the bone. The bone is never involved in a true osteitis, the infection being largely limited to the soft tissues. The bone is resorbed by osteoclasts, but is not exposed and necrotic as in osteomyelitis. Bearing this in mind there appears to be no reason why the infection can not be eliminated by conservative means. Radical surgery founded on the basis of removal of necrotic bone is based upon an erroneous belief. Surgery should not be carried below the circular ligament which is destroyed in the pyorrhetic process and formed lower down.

Extractions in pyorrhea should be carefully considered and the prognosis determined by clinical and radiographic investigation. The factors to be studied when determining what teeth should be extracted are:

1. Forms of pyorrhea and progress of same as determined by clinical and x-ray examination. Under this consideration the author classifies pyorrhea into three forms:
   a) Pyorrhea resulting from neglect or uncleanliness
   b) Paradental pyorrhea (individual deep pockets)
   c) Alveolar atrophy of which there are two forms; (1) atrophy and pocket formation as a result of traumatic occlusion; (2) diffuse atrophy.

The appearance of the bone, depth of pockets, difficulty in maintaining hygiene, exposed bifurcations are discussed in the above types.

2. Attitude of mind of the patient.

3. Occlusion of teeth, their number, malformations, malpositions, and appearance and presence of root filled teeth.

4. Presence of systemic infection and effect on prognosis.

5. Mouth breathing and effect on prognosis.

6. Age of patient.

A lively discussion of the paper by members of the Australian Dental Association follows.

—*G. H.*

441—Mowry, D. P.: **Periodontia and the common weal.** D. Cosmos, 78: 478-480. May, 1936.

The author claims the dental profession is only 10% proficient in the treatment of periodontal lesions.

The establishment of state dentistry in the near future may definitely take place, owing to the neglect by the practitioner of prophylactic measures. The dentist should clean teeth to the base of the gingival crevice, provide occlusal surfaces that function, restore surface outlines, and instruct the patient in daily home care.

In proportion to the amount and the intensity of work to which the supporting tissues are subjected will the teeth be healthy and the bones enlarge to accommodate the permanent dentition. Young teeth have high cusps and require function and abrasion; old teeth require less lateral stress.

The modern diet from infancy to adult-

hood provides no resistance to the teeth. Foods are soft and instead of wearing down the cusps, adhere to their surfaces; these deposits form excellent culture media for oral flora. Adequate removal of such deposits, especially from sub-contact areas, with as few as six instruments, is all that is required to keep these tissues healthy.

The dentist should be able to observe and recognize clinical oral symptoms which suggest general metabolic impairment. The cells and the tissues of the body desire to be well. The dentist must stop looking for cure-alls and apply the fundamental rules of relation of form to function. Dentists must coördinate all their factual knowledge in order to be optimally skilful and educationally progressive.

455—Weicksel: **Diabetes und Mundkrankheiten.** Parad. 6: 105. 1936.

The author discusses the increased occurrence of diabetes during the last 30 years and its etiology. Then he shows the pathological physiology and diagnostic symptoms of diabetes. Paradentosis occurring in connection with diabetes is especially important. It seems as if the metabolic disturbances in diabetes are the main causes of paradentosis. Treatment of diabetes is in addition to the diabetic therapy insulin for younger patients and synthalin for older patients. With the successful treatment of diabetes usually the accompanying paradentosis will disappear too.

442—Mueller, R.: **Die Verwendung der Diathermie bei der Paradentosebehandlung.** The use of diathermy for the treatment of paradentosis. Z. Rundsch, 41. 1811. 1936.

Since 1928, Herbst has used the electric knife for cutting gingival flaps and especially for the gingivoectomy. Besides, he has used diathermy for the deep radiation of the alveolar process with much success.

443—Nesson, J. H.: **What the patient should know about pyorrhea.** D. Cosmos, 78: 123-129. 1936.

The importance of the deciduous teeth in the spacing and development of the permanent teeth, and the role such spacing plays in pyorrhea is stressed. The author runs over a listing of the varied etiological theories of pyorrhea in order to impress upon the reader the variety of factors playing a role in the cause of the disease. After a simple discussion of the symptomatology of pyorrhea, Nesson stresses the importance of establishing the health of the supporting periodontal tissues before starting any dental restorative work.

The treatment of pyorrhea should be preventive also proper toothbrushing technic is of prime importance in the treatment of the disease, the prevention of its recurrence, and the maintenance of oral hygiene. The correction of any systemic disability must be considered as part of the problem of treatment.

—*G. H.*

445—Nux, Henry: **Application of Pfannenstil formula in gingival conditions,** in: Sem. Dentaire, p. 1057. 1936.

The author suggests the use of a 2% solution of sodium iodide to which is added hydrogen peroxide. The reaction which takes place is the following:

$$2\ NaI + H_2O_2 \longrightarrow 2\ NaOH + I_2$$

Following curettage of all the teeth, and after a two day rest the writer applies a small tampon of cotton deeply into the area making sure to paint the affected surfaces. This first pledget is saturated with the NaI. A second tampon used in the same fashion saturated with hydrogen peroxide is then employed.

Thus far no intolerances or iodisms have resulted from this treatment. The author has used as many as ten applications, but no more, and has obtained marked results beneficial to periodontal tissues.

446—Pekker, Y.: **Ulcerative stomatitis in the clinic.** Odontologie, p. 675. 1936.

Ulcerative stomatitis is of infectious origin. This is determinable from the facts that it is infectious and that antiseptics cure it. Predisposing causes to this condition are: (1) Trauma and erupting teeth, (2) Infectious diseases (3) Avitaminosis (4) Idiosyncracies to certain foods. (5) Chemical poisonings (6) Menstruation.

General treatment: Rest, nourishing foods (liquids) vitamin containing foods, cessation of the use of alcohol and tobacco.

In severe forms caffeine and camphor may be used.

Local Treatment: 1. Application of antiseptics, 2. Rinsings, 3. Cauterization with drugs. Avoid extractions.

447—Podolin, Mathew, D. D. S.: Cold and heat therapy in dental inflammations. J. A. D. A., 23(1): 61-65. Jan., 1936.

"Certain authorities advocate cold in early inflammation, while others prefer heat, to prevent swelling. Contradictory opinions are commonly heard from reputable surgeons." There is great danger in using either heat or cold therapy haphazardly; instead it should never be used without consulting the findings of scientists and experienced clinicians. "One should distinguish between the reparative processes occurring under aseptic conditions and those in the inflammation connected with septic conditions." The latter may cause temporary tissue destruction but results eventually in the extermination of the microbic agents. Although it may be harmful in some ways, it is mainly beneficial in effect. This is one instance when stimulation by heat is advantageous.

DeNancrede says that cold must be applied constantly, not spasmodically, if it is to be used at all because the removal of it causes increased hyperemia. However, continual usage is hazardous and should never be employed in bacterial inflammation. The theory that cold hinders bacterial activity has no scientific support.

Heat stimulates bacterial growth, also all activities of the body tissues as well as the chemical reactions which work against the invaders. It causes the assemblage of leukocytes to prevent infection from spreading, whether or not suppuration is prevented.

Inflammation is a warning signal but it is not usually dangerous in itself. It is a natural method of combatting infection and one should coöperate with it in order to achieve the desired results.

The probable cause and its consequent treatment are the two factors under consideration in any case of inflammation. Cold is useful after tooth extraction and may be used to alleviate pain from nonseptic pericementitis.

Septic and nonseptic inflammation require different methods of treatment. The object in treating the former is the elimination of bacteria and their resulting poisons with no more injury to the tissues than is absolutely necessary. Application of hot fomentation is advised in this instance as well as in suppurative inflammation past the stage of abortion.

The author draws the following conclusions:

1. Cold is applied with benefit in some cases of acute inflammation resulting from trauma, but never in inflammation resulting from infection.
2. Cold checks inflammation by constricting the vessels of the hyperemic area, thus lessening the amount of blood sent to that part, prevents migration of leukocytes, retards self-proliferation and lowers temperature, thereby inhibiting the natural body defenses.
3. The application of cold in a suppurative inflammation has often been followed by necrosis and degeneration.
4. Cold, while beneficial in one stage of inflammation, becomes injurious in another.
5. It is questionable that heat would not be just as beneficial in traumatic inflammation as would cold.
6. Heat should be applied in all cases when localization is desired.
7. Heat should be applied in all cases in which metabolism is an important factor in treatment.
8. The therapeutic medium extensively used in most of the hospitals and by many oral surgeons is moist heat.
9. Moist heat has a soothing effect on the nerves, thus relieving pain, a very important factor in treatment.

—*G. R. S.*

448—Preissecker, Otto: Fixe oder abnehmbare Schienen? (Fixed or removable splints.) Ztschr. f. Stom., 23: 1409. 1935.

Fixation of the teeth can be accomplished just as well with removable as with fixed splints. The removability makes possible better oral hygiene and caries prophylaxis. The vital teeth can be easily removed and substituted. The patients get used to wearing a prothesis at the same time. Because removable splints are not advisable in the upper jaw for cosmetic reasons, a splint with a lingual bar is used. To understand the technic it is necessary to see the pictures and read the explanation.

449—Robinson, W.: Stimulation of healing in non-healing wounds by allantoin, etc. Annals of Dentistry, III. 212. Dec., 1936.

Allantoin, a constituent of the urinary secretions of surgical maggots, has been

found to stimulate healing, with abundant growth of healthy granulation tissue in slowly healing suppurative wounds.

Allantoin can be obtained commercially. It is bland, stable, harmless, odorless, and does not stain. The treatment is simple, painless and inexpensive.

450—Roy, Maurice: Several considerations of splints for teeth of pyorrhetic condition. Odontologie, 74: 130-147. 1936.

The author points out that malocclusion is one of the primal causes of periodontal disturbances. Grinding is advised with the following axiom in mind. The dental arches of pyorrhetic cases ought to be articulated like a full denture, so that no matter what the movement may be no single tooth will be interferred with by its opponents.

Having relieved all traumatic forces, groups of teeth are often in need of "fixation" or stabilization to sponsor bone growth about the apices of teeth so that normal masticatory stresses may once again be borne by the teeth. The author has devised a classification of the teeth into groups generally composed of posteriors, cuspids, and anteriors, which tend to receive the same directional stresses respectively.

For example if a single lower central is very loose the author provides for a lingual splint that locks all anteriors together like fixed bridgework. The author feels that only full crowns or pivot crown can successfully immobilize the pyorrhetic conditions requiring such stabilization.

Posterior splints of bilateral nature are often locked by a lingual bar to compensate for exaggerated buccal movements of these teeth.

Designs for such splints for an entire mouth are presented.

451—Rutner, A.: Clinical and radiographic control of child teeth attacked by periodontitis and treated with silver salts. Odontologie, 1936.

Howe's method altered according to Rickert is employed, $AgNO_3$ in alcohol reduced by eugenol. In simple cases excellent results have been obtained. In difficult cases 80% have shown good results.

452—Sorrin, Sidney, D. D. S.: A review of the treatment of periodontal disease with special emphasis on conservative methods, in: D. Cosmos, 78: 225-231. 1936.

A review of the indications and contraindications of the radical types of surgery versus the conservative method in the treatment of periodontoclasia is presented. Dr. Sorrin objects to the excessive use of radical surgery in treatment of periodontal disease on the grounds of unsightly appearances; sensitive roots; worry and discomfort of the patient; the ease of misinterpreting rarified bone for lost bone; and systemic complications. Where long treatment is undesirable, as in cases of chronic diseases; where bifurcations are involved; and when conservative treatment fails radical surgery may be resorted to.

Conservative treatment results in the reattachment of peridental tissues, at least clinically, conservation of soft tissues, and bone regeneration. Conservative treatment is based on sound scientific principles of histopathology of the tissues. Accurate charting and recording, removal of local and systemic etiologic factors, restoration of function, scientific instrumentation, dietary instruction and home care are all important.

Both methods of treatment have their place in the cure of periodontal disease and one should acquaint himself with the intelligent application of whatever method is best suited to the case at hand.

—*G. H.*

453—Teeling, M. A., D. D. S.: Physical therapy in pyorrhea, in: American Journal of Physical and Ambulant Therapy, 1936. Abst. D. Survey, 12: 379. 1936.

Why do many patients "cured" of pyorrhea continue to return to their dentist with a recurrence of the disease? Why is orthodox treatment not 100% efficient? Dr. Teeling questioned his patients, kept records of their personal histories, found that the patient would invariably advance the information that he was suffering from some gastro-intestinal disturbance or constipation and was not following a proper diet.

The oral manifestation of pyorrhea is merely one of a number of symptoms of a condition due to a systemic upset. Therapeutically, instrumentation and local application of drugs are important, but associated systemic treatment (physical therapy,

diet, ultraviolet light, etc.) is invaluable if a permanent cure is desired.

Teeling said the results obtained from a systemic cleaning in conjunction with oral treatment were astounding. He insists both patient and dentist must realize that the secret of successful treatment lies in the removal of all toxins from the body, and in proper dietary control.

454—Tourbier: **Vitamin C zur Behandlung der Gingivitiden.** Z. Rundsch, 46: 2138. 1936.

Author reports his observation on the successful treatment of chronic gingivitis with synthetical vitamin C. Though the patients had enough fruits to secure sufficient amount of vitamin C in their diet, usually their gingivitis did not clear up. Vitamin C in tablet form given for several weeks combined with the usual local treatment cured the gingival symptoms quickly. It was used in cases of chronic gingivitis, ulcerous gingivitis, stomatitis and gingivitis gravidarum.

456—Weinberger, W.: **Versuche einer Beeinflussung der diffusen Alveolaratrophie durch ein eiweissfreies. Extrakt aus Knochenkeimgewebe.** Research about the influence of albumin free extract from osteoblastic tissue upon the diffuse alveolaratrophy. Ztschr. f. Stomat. 2: 87. 1936.

Author reports his results with horosteon which is an extract of protein free germinative bone tissue. He used it successfully in the early state of a diffuse alveolaratrophy. He advises its use as prophylaxis to prevent any noxious effects of constitutional diseases upon the paradentium. The extract is injected, ½ ccm once a week into the oral mucosa for about five to six weeks. Horosteon does not substitute the other paradental therapies but only supports their value. Other indications for its application are: fractures, pseudoarthrosis, after cysts-operations and apicoectomy, orthodontia, implantations, and bone grafts.

457—Wissotzky, A.: **Behandlung der Paradentose mittels Hormonen.** Ztschr. f. Stomat. 20: 1255. 1936.

Author divides his patients whose paradentoses is due to endocrine disturbances, into two groups. (1) Patients with all kinds of endocrine disturbances but no diabetes. (2) Patients with diabetes.

In group one he had only a few successful results by hormone therapy.

In group two his results were better. The improvement was dependent upon the sugar content of the blood and urin. Where the general insulin treatment had no effect upon the paradentium he injected it into the oral mucosa. Improvement was brought about in all cases. Injection should be made carefully and not more than 2-3 drops should be given the first time.

458—Yeretsky, Willa, D. D. S.: **Diagnosis and evaluation of treatment in periodontoclasia.** J. A. D. A. 23: 1185-1194. July, 1936.

This article briefly outlines methods of diagnosis in periodontoclasia. It particularly stresses the need for careful visual and digital examinations with use of the probe; the radiogram to be used only as an adjunct. The author feels that so much stress has been placed on the radiogram as a diagnostic agent that many important factors are overlooked which are not represented in it.

A description is given of subgingival curettage by the so called conservative method as well as the various popular methods of radical surgery. A comparison of these methods is presented.

The author feels that in general the enthusiasm for surgery is not warranted by the results. In the hands of skilful experienced operators subgingival curettage will be found to be usually the method of choice. This method causes no destruction of the tissue; it prepares the field for regeneration of the alveolar bone and readherence of the gingival tissue to the cementum; it causes a minimum of discomfort to the patient and does not incapacitate him for any time; and it carries no great element of shock. It has the disadvantage of operation by the sense of touch only, in an invisible field.

Radical surgical procedures may be indicated as a last resort when so much destruction of alveolar support has occurred as to render questionable retention of the teeth.

Patients on whom a surgical operation is to be performed have to have preoperative preparation of the field, requiring one or more visits and, after operation, may be

confined to bed for varying periods. Hence, surgical measures require much more of the patient's time as well as the dentist's than does subgingival curettage. The follow-up prophylactic care is just as requisite, and much more difficult after surgical operation than after subgingival curettage. The only advantage of surgical procedure is the fact that the field of operation is visible.

—*W. Y.*

459—Zannoni: Die Mechanotherapie der Paradentose. Parad. 1: 13. 1936.

Zannoni (Mailand) says that there are paradentoses which are caused by diathesis or endocrine dysfunction. But the knowledge of these causes is yet too indefinite to base therapy upon it. Gingivoectomy is only of limited value. The best therapeutic measure is a fixed splint. He discusses the advantages and disadvantages of different splints and is strongly in favor of the Mamlok splint.

Attention--Members of American Academy of Periodontology

The Journal of Periodontology is appreciated by dentists in South America. One dental society has sent in *seven* subscriptions for 1938.

Thirty-two medical and dental school libraries now have permanent subscriptions—two of these are in China and two are gifts from Academy members.

Is your dental school library one of the above thirty-two?

BOOK REVIEWS

Clinical Diagnosis of Diseases of the Mouth; a Guide for Students and Practitioners of Dentistry and Medicine, by Hayes, Louis V., A. B., D. D. S., associate professor of oral surgery and lecturer on diseases of the mouth, New York University, College of Dentistry; associate visiting dental surgeon, Bellevue Hospital, etc., with an introduction by Leo Winter, D. D. S., M. D., Sc. D., LL. D., professor of oral surgery, New York University, College of Dentistry, etc. 461 pp. 12 colored plates and 353 illustrations. Dental Items of interest Publishing Company, Inc., Brooklyn, N. Y., 1935.

Clinical Diagnosis of Diseases of the Mouth consists of twenty chapters dealing essentially with diseases of the mouth. The first four chapters treat of the various aspects of oral diagnosis. The following fifteen chapters discuss such subjects as: "The More Common Mouth Lesions." "Lesions of the Gums, Lips, Cheek, Tongue, and Palate." "Oral Manifestations of Syphilis." "Glandular Disturbances." "Correlation Lesions of the Face." "Facial Swellings." "Neuralgias." "Growths in the Oral Cavity." "Fractures." "Cysts." The last chapter covers the subject matter for instructional purposes.

Dr. Hayes' book has two good features. The first of these is an abundance of original illustrations reproduced from excellent photographs. The second feature is an extensive bibliography covering eighty pages. There is, however, much repetition of references due to the separate recording of the bibliography for each chapter at the end of the book.

—*Copy from Dental Cosmos. April, 1936.*

Dental Histology and Comparative Dental Anatomy, by Kronfeld, Rudolf, B. S., M. D., D. D. S., Professor of Dental Histology and Pathology in the Chicago College of Dental Surgery, School of Dentistry, Loyola University, Chicago, Illinois; Worker of the Foundation for Dental Research of the Chicago College of Dental Surgery; Fellow of the American Academy of Periodontology; Former Assistant at the Dental Institute of the University of Vienna, Austria. 195 pp. 115 illustrations. Lea & Febiger, Philadelphia. 1937.

Dr. Kronfeld has scored again, this time with his *Dental Histology and Comparative Dental Anatomy.* The present volume, although small (less than 200 pages), will satisfy the reader's highest expectations.

It was written obviously and avowedly as a text book for dental students and according to the author's statement in the preface, his object was to conform as closely as possible to the specifications for a course of study in dental histology set down by the Curriculum Survey Committee of the American Association of Dental Schools. As a result the student has here the benefit not only of scientific knowledge of the highest order in the author but also the advantage of a course of study thoughtfully planned by men especially trained in teaching methods.

The student will not be confused by a multiplicity of facts or a discussion of controversial or secondary matters; instead his attention is focused on important and fundamental facts and information which he will be able to grasp and retain.

Each chapter concludes with a summary and this is followed by the related laboratory exercise, the author agreeing with the Curriculum Committee that the laboratory teaching should be conducted as soon as possible after the lecture on the corresponding subject, and in order further to enliven the otherwise rather static histologic material, the author has correlated the subject with its clinical implications and with other sciences.

In the chapter on alveolar bone we have in addition to a description of the form and structure, a discussion of its adaptation to function and its response to various stresses and injuries.

The practical advantage of the arrangement of the principal fibers of the periodontal membrane so as to exert pull instead

of pressure on the alveolar bone; the clinical significance of gnarled enamel; the greater need for protective cavity lining in young teeth; the origin of the epithelial rests of Malassez and their appearance in connection with apical granulomas; all these serve to vitalize the subject.

The newer concept of the epithelial attachment and its significance is of course dwelt upon at considerable length, and it is doubtful if one can find anywhere else in the literature such a concise, clear, and satisfactory description of the gingival tissues and their varying relationship to the tooth surface at different periods of life.

The following quotation is characteristic of the simplicity and practicality noticeable throughout:

"It is important to know that the shallower the gingival crevice, the less likely it is to harbor bacteria and debris and thus become diseased. The ideal of oral hygiene must therefore be to have crevices of no depth or at least very shallow. This can be attempted and also attained by good oral care, proper brushing of the teeth, and avoidance of gingival irritation."

In the chapter on tooth development Kronfeld has been particularly successful in condensing the rather complicated process within the space of some twenty pages abundantly interspersed with explanatory engravings. The following chapter on radiographic interpretation further clarifies the subject by the use of radiographs of jaws at successive periods from birth throughout the years of eruption and shedding of the deciduous teeth.

The tables for the development and calcification of teeth, deciduous and permanent, are brought up to date being based on the most recent histological and clinical investigations including among others those of Hess, Roman and Lewis, Kronfeld, McBeath, Logan and Kronfeld, and Schour.

Not the least valuable part of the book is the excellent bibliography and selected list of references for each chapter which is appended at the end of the volume, and by which the student be he undergraduate or practitioner can enlarge and increase his information according to his interest in the subject.

There is also appended a list of examination questions on the subject matter of each separate chapter and a glossary of terms and proper names. One might ask that this last be more complete.

The nomenclature has been simplified as much as possible to avoid confusion in the mind of the student but Kronfeld is insistent as to the importance of rigid accuracy in the use of terms.

The author agrees with the Curriculum Survey Report that, in the main, preparation of histological material by the student is too time-consuming and unsatisfactory to be practicable. He however, gives an outline of the histological technic.

The last regular chapter in the book is devoted to a "survey" of the subject of comparative dental anatomy and on its perusal one is readily convinced of the wisdom of including it in such a book. With a knowledge of the manner in which different groups of animals are equipped with teeth and the way the various types of dentition are adapted to the needs of the animal and his kind of food, interest is enhanced in the entire subject of form, structure and function of teeth.

The author is especially to be congratulated on having so admirably accomplished his objective, a course of Instruction in Histology and Embryology as set forth in the "Red Book" (report of the Curriculum Survey Committee, page 135).

(1) To understand the principles of the structure of the human body, particularly the oral cavity, thereby completing the student's background of anatomy and developing a histologic foundation for the later study of physiology, pathology, and clinical dentistry.

(2) To read intelligently, understand and evaluate the illustrative histologic and embryologic material in literature and discussions related to dental and other biologic problems.

(3) To locate information on histologic and embryologic problems.

(4) To appreciate the nature and importance of research in histologic and embryologic problems.

And thanks are due to the publishers, Lea & Febiger, for their promptness in co-operating to produce a text-book in con-

formance with the present demands for the teaching of dental histology.

While there may be little in the text of Kronfeld's Dental Histology and Comparative Dental Anatomy that is new to readers familiar with other recent writings on the subject, we are confident that not only the undergraduate student but the practitioner as well will find this concise and simplified text easy, interesting, and delightful reading.

Dr. Kronfeld has dedicated his book to his distinguished father, Dr. Robert Kronfeld of Vienna, Austria, who has been a leader in the dental profession of that city for more than forty years.

—*Celia Rich*

Diet and Die, by Malmberg, Carl. pp. 149. Carl Hellman, Inc. New York, 1935. Copy from J. A. M. A. 106 (22): 1945. May 30, 1936.

In this small book the author tells much about current fallacies promoted by such writers as William Howard Hay, Benjamin Hauser, and other peculiar dieticians who have recently invaded the field of diet. He discusses as well the current reducing diets, such as the banana and skim milk diet, the Hollywood diet, and the milk farms. The title would seem to have been unfortunately chosen, since it is far more sensational than the content. The book is nicely written and quite authoritative. The book may well be recommended by all physicians to patients who are interested in being disillusioned regarding the fallacies that continually recur in the nutrition field.

Operative and Interpretive Radiodontia, by Thompson, Walter S., D. D. S., Associate Professor of Radiodontia, College of Dentistry, University of Southern California; Lieutenant, U. S. N. R., Special Service Instructor in Radiodontia; Consulting Radiodontist, Los Angeles County General Hospital, Cedars of Lebanon Hospital. 374 pp. 355 engravings. 1936.

This is one of the most attractive and descriptive books on this subject. The technic of the different operations is portrayed in such a manner that it can be followed by any one who gives it the necessary thought.

Radiodontic practice is so widespread that, in these days, few practitioners attempt to get along without it, and the simpler and clearer it is made, the more widely will it be used. To attempt to practice dentistry today without the benefit of roentgen-ray interpretation would be almost on a par with closing one eye.

The type and paper in this book are of very high order, and the publisher has cooperated in every way with the author in producing a highly pleasing effect.

—*Copy. J. A. D. A. 1936.*

Oral Diagnosis and Treatment Planning. A text for the dental student, a reference book for the practitioner and medical student, by Thoma, Kurt H., D. M. D., Charles A. Brackett Professor of Oral Pathology in Harvard University; Oral Surgeon to the Brooks Hospital; Consulting Oral Surgeon to the New England Baptist Hospital; Consulting Oral Surgeon to the Tumor Clinic of Beth Israel Hospital. 379 pp. 533 illustrations, 71 of them in colors. W. B. Saunders Co., 1936.

It is really refreshing to be furnished a book by a dentist on a subject so far reaching and fundamental, and at the same time having such a practical application. Dr. Thoma has reached out into the basic consideration of the medical sciences, but has not lost touch with the every-day practical problems of the hour. The book is therefore not only sound scientifically, but is also readable and most interesting. Its scope is very wide, but does not encroach on the domain of topics outside of its purview.

The illustrations may be termed "practical," and it is therefore never irksome to examine and study them. If some of the engravings, for example, Figure 286, seem too diagrammatic, it must be acknowledged that they illustrate a sound concept in pathology, and that they could not well be presented in any other way. The color plates are most impressive and rivet the attention of the reader as no other kind of illustrative matter can ever hope to do.

The publisher and author are to be highly congratulated on the excellence of this work.

—*Copy. J. A. D. A. 1936.*

The Parathyroids in Health and in Disease, by David H. Shelling, B. Sc., M. D., Johns Hopkins University and Hospital, Baltimore. Illustrated. 335 pages.

While the thyroid gland has had the benefit of extensive investigation for many years, recognition of the significance of the parathyroids is of more recent date. Now these small glands are being subjected to more intelligent scrutiny and their study is bearing fruit in an ever increasing extension of knowledge on the subject. The present book is one of the most comprehensive and satisfactory studies that has ever been given the subject. In fact, as far as the reviewer is concerned, it is the only really authoritative treatise from the point of view alike of the physiologic, or functional, and the pathologic manifestations of this important structure. And it is well that this study is made at this time. The significance of the calcium and phosphorus metabolism as affected by these glands will be better understood from a study of the present work. First, the anatomy of these small structures is considered as a basis of study. Failure to make an intelligent survey of the minute anatomic structures of these glands, particularly in their relation to the other immediate structures, led to much misconception by the early investigators. Sometimes, studies of structures as intricate as these present difficulties of an unusual character, and the present volume is all the more valuable in view of its authentic anatomic background. The "Pathology of the Parathyroids" comes in for much consideration, and this is discussed in great detail. The references in this chapter run to eighty-nine, which proves the extensive study given this phase of the subject. In view of the increasing interest in the clinical aspects of metabolism as affected by the parathyroids, the chapter on "Physiology" will call for much study, and the contributory literature on this one phase is represented by no fewer than 157 references. Such subjects as "Hyperthyroidism" and the relation of parathyroids to other glands and to the vitamins are adequately considered; and at the end of the book there is a comprehensive appendix containing every conceivable kind of diet as it relates to the various phases of the subject under discussion. The book is a mine of information on a most important topic and the literature of the profession is greatly enriched thereby.

—*Copy. J. A. D. A. 1936.*

Vitamins in Theory and Practice. By Leslie J. Harris, Sc.D., D.Sc. Nutritional Laboratory, University of Cambridge, and Medical Research Council. 240 pages. 66 illustrations. Published by the Macmillan Company, New York City, 1935.

We have been hearing so much about the various vitamins in recent years that anything authoritative on the subject must appeal to us. The present book is made up of a series of four lectures given at the Royal Institution, London, in 1934. The author has presented his subject in a "frankly colloquial tone," which relieves it of the usual dry technical treatment often accorded subjects of this character. The book is not hard to read, and after it is read, if the reader cares to go farther into the subject and dig deeper, he may have ample scope in the different acknowledgments or references in the beginning of the book. There are nearly three pages of these, which would seem to provide food for thought on most of the vitamin literature of the day. "The A B C of Vitamins," a pleasing poem signed by C. H. A., starts the volume off with a more or less rollicking jingle that is rather attractive, and it paves the way for the more serious consideration of the subject in the body of the book. We commend this book to anyone interested in the subject, and if there is anyone who is not interested, it is high time that he was.

—*Copy. J. A. D. A. 1936.*